AUTOMOTIVE INDUSTRIES
The AUTOMOBILE

Reg. U. S. Pat. Off.
Established 1902

Vol. 62 No. 21

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Automotive Industries is published every Saturday by
CHILTON CLASS JOURNAL COMPANY
Chestnut and 56th Streets, Philadelphia, Pa.

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Controlled by United Business Publishers, Inc., 239 West 39th St., New York; ANDREW C. PEARSON, Chairman, Board of Directors; FRITZ J. FRANK, President; C. A. MUSSELMAN, Vice-President; F. C. STEVENS, Treasurer.

SUBSCRIPTION RATES: United States, Mexico, United States Possessions, Canada and all countries in Postal Union, $3.00 per year; Foreign, $6.00 per year. Single Copies 35c.

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Automotive Industries—The Automobile is a consolidation of the Automobile (monthly) and the Motor Review (weekly), May, 1902; Dealer and Repairman (monthly), October, 1903; the Automobile Magazine (monthly), July, 1907, and the Horseless Age (weekly), founded in 1895, May, 1918.

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AUTOMOTIVE INDUSTRIES

VOLUME 62 MAY 24, 1930 NUMBER 21

The S. A. E. at Twenty-Five

Proudly displays a quarter-century record of an industry which, from small beginnings, rose to the position of a dominant world factor by free discussion of the problems of its engineers

By P. M. Heldt

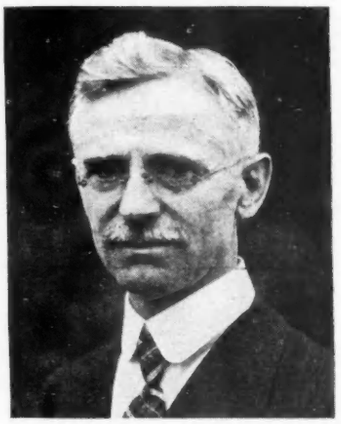
The first meeting of the S. A. E. organizers was held under a photographer's and over a bank

MORE than twenty-five years have passed into history since a small group of men interested in automobile development met in New York City to discuss plans for the organization of a society of automobile engineers. They realized the need for such an organization, and they followed up their plans with commendable energy, with the result that the Society of Automobile Engineers came into being at a formal organizing meeting held at the Hotel Navarre, New York, on Jan. 18, 1904. That was the beginning of what is now the Society of Automotive Engineers. The change in name from "Automobile" to "Automotive" was made during the war, when the society widened its scope to enable it to take in engineers interested in applications of the internal combustion engine other than for road transport purposes.

From the above it will be seen that the S. A. E. might have celebrated its twenty-fifth anniversary as far back as the winter meeting of 1929, but we dare say that the fact that the anniversary is slightly past due will not

P. M. Heldt, Engineering Editor, Automotive Industries, was the first chairman of the Papers Committee of the S. A. E. (1908) and active contributor to the Society's technical discussions. + + +

Mr. Heldt was the author of the following papers, among others, presented before the Society—Design and Construction of Camshafts (March, 1908)—Value of Standards in Tractor Manufacture (April, 1922)—Overhead Camshaft Passenger Car Engines (June, 1922)—Some Recent Work on Unconventional Transmissions (July, 1925)—Sleeve Valve Engines (March, 1926)—Development of High Speed Diesel Engines (July, 1927)—Front-Wheel Drives (March, 1930).



worry any of those who will celebrate it at French Lick next week.

If the American automobile industry today occupies a predominant position in the world, it is in no small measure due to the free interchange of ideas and experiences of its engineers, and to their cooperative efforts in connection with standardization and other activities, which were made possible through its technical organization, the S. A. E. Cooperation in industry is a development of recent times; it has to a large extent superseded the bitter antagonisms that previously resulted from fierce commercial rivalries. Today there are probably few industries in which the cooperative spirit is so pronounced as in the automobile industry. In part this may be due to the fact that in the early years there was much need for cooperative effort, in stimulating public interest in road improvement; in safeguarding the legal rights of the new vehicle, and in bringing its advantages to the attention of the public in the most effective way.

It is a matter of particular satisfaction to the publishers and the staff of *Automotive Industries* that the first publisher of this paper, Horace M. Swetland, not only was one of the organizers of the Society but gave the new organization his whole-hearted support, particularly during the first years of its existence, when it was struggling against adverse circumstances. Three editors of the paper, Thomas J. Fay, H. F. Donaldson and David Beecroft, have served the Society as president, while others of its editorial staff have served as Members of Council, chairman of the Standards Committee (A. Ludlow Clayden), chairman of the Papers Committee (Mr. Heldt), secretary (Mr. Swetland), etc.

The man who took the initiative in the organization movement was Edward T. Birdsall, now research engineer of the Wright Aeronautical Company. Following are the nine men who were invited to the preliminary meetings, which were called by Mr. Birdsall: A. L. Riker, vice-president, Locomobile Company; H. M. Swetland, president, Class Journal Company; Henry Ford, president, Ford Motor Company; E. T. Whiting, Lucius T. Gibbs, Hiram P. Maxim, H. F. Donaldson, Henri G. Chatain and H. Vanderbeek. It appears that all except Mr. Ford were present.

In giving an account of the organization and the early activities of the Society I cannot do better than

An S. A. E. Meeting in Detroit, 1908

History does not record the names of the entire group pictured herewith, but those identified include (3) Charles B. Hayward, secretary; (4) Thomas J. Fay, president of the S.A.E.; (5) Henry M. Leland, Cadillac Motors; (7) Mr. Newman, Woods Motors; (8) H. W. Alden, Timken Roller Bearing Co.; (9) William Cramp, Cramp Shipyards; (10) B. G. Ellis, Boston; (11) C. A. Trask; (12) Mr. Frost, Jackson, Mich.; (13) W. G. Wall, National Motor; (14) Bruce Ford, Electric Storage Battery; (15) M. M. Sweet, chief engineer, Cadillac; (18) Mr. Chandler, Willard Battery; (20) Mr. Franquist, Simplex Motors, and (22) Frank Johnson, designer of Cadillac engine

to quote Mr. Birdsall, who can speak from first-hand knowledge of these events. Now that the membership has grown to nearly 7000 the early doings of the Society when, as at the first annual dinner, all were seated at a single table, assume a certain romantic interest. To quote Mr. Birdsall:

"We called a meeting at the rooms of the Automobile Club of America, which were then at 753 Fifth Ave., under a photographer and over a bank—a good combination. At the present time you cannot do without a photographer and Heaven knows we need the bank.

"At that meeting it was decided that it might be a good thing to start a society of automobile engineers, although I could see by the way they talked that they thought I had probably been over to the New York Athletic Club for dinner and that the alcohol was working.

"However, we made a start, and on Nov. 30, 1903, I sent out a second letter to nine gentlemen, and we held the first meeting for organization. In the meantime, however, the original five, Messrs. Ricker, Gibbs, Swetland, Whiting and myself, had had several meetings at the Automobile Club, at which we went over all the by-laws and constitutions of the various societies to which I was paying dues, and which were the only return that I had really ever received from most of them; and we decided tentatively on a constitution and by-laws.

Formal Organization

"In the winter of 1903-04 the Society was formally organized and we held our first meeting. We were a close corporation. There were five of us, and we kept everything among ourselves. It was just like they do in Wall Street today. Mr. Riker was elected president and I secretary-treasurer; and being the pioneer, I was necessarily the goat: They shoved all the work on me. I had to get the members and then collect the money from them; and, believe me, it was no easy work in those days to collect $10.00 a year when we were not giving the members anything in return. We did not even have a badge. As secretary I would get an application for membership; as chairman of the membership committee I would pass on the member; as secretary I would send out notice of his election; as treasurer I would send him a bill for his dues. If the membership committee thought that the member proposed was not eligible, as treasurer I would say to myself, 'that's all right, but we need the money,' and the treasurer would prevail on the chairman of the membership committee to elect the man to membership."

At the first regular meeting at the Hotel Navarre (held at the time of the 1904 New York automobile show) A. L. Riker was elected president; Henry Ford, first vice-president; John Wilkinson, second vice-president and Edward T. Birdsall, secretary and treasurer.

After a period of quiescence of two years the Society held its first annual dinner and professional meeting at the Grand Hotel, New York, on Jan. 8, 1906. About thirty were in attendance at this meeting, which occupied a single evening. Three papers were read, the subjects being materials of construction, ball bearings and carburetors.

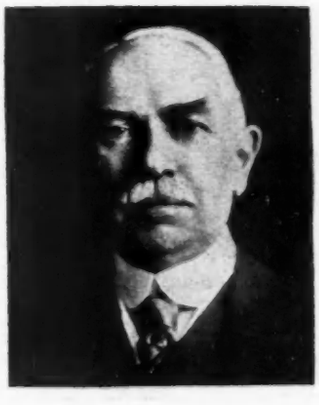
In January, 1907, the annual meeting was again held at the Grand Hotel, and this time it comprised an afternoon and an evening session. At the annual dinner, held between the two sessions, the number of covers laid was twenty-four, which is indicative of the slow growth of the Society, now three years old. Two technical papers were read at each of the two sessions, and their presentation consumed so much time that none was left to attend to the business of the Society (which in those days seems to have come last on the program), for which reason the scheduled election of officers was dispensed with and the old officers were continued in office for another year.

Fay Elected Second President

The third annual meeting was again held at the Grand Hotel, in Jan., 1908, and this time an election was held. Thomas J. Fay, then managing editor of "The Automobile" (an ancestor of *Automotive Industries*), was elected president, and Charles B. Hayward, technical editor of "The Automobile," acting secretary. The meeting again was held during the afternoon and evening. A draft for a new constitution and by-laws was presented by a committee headed by Henry Hess, same being patterned after the constitution and by-laws of the American Society of Mechanical Engineers. At this meeting it was decided to hold quarterly meetings in future.

In January, 1909, the annual meeting was held in two sessions, the first of these at the new clubhouse of the Automobile Club of America, 54th Street west of Broadway, and the second, some 14 days later, at the Engineering Societies Building. A feature of the first session was an inspection of the chassis dynamometer which the Automobile Club of America had installed on the eighth floor of its clubhouse (and which later passed into the possession of Sheffield Scientific School, Yale College, New Haven, Conn.) Henry Souther, chairman of the Technical Committee of the A.C.A., and his assistant, Herbert Chase (later Associate Engineering Editor, *Automotive Industries*), explained the operation of this dynamometer, onto which any car could be run with its rear wheels to have the power available at its driving wheel rims measured. At this meeting Henry Hess of Philadelphia was elected president.

A considerable number of members were present at the two sessions and there were other evidences that the affairs of the Society had taken a turn for the better, such as a treasury balance of



HORACE M. SWETLAND, president of the Class Journal Co. and founder of modern business journalism, was one of the five organizers of the Society of Automotive Engineers.

Mr. Swetland at the time of his death in 1924 was president of the United Publishers Corp., owners of Automotive Industries.

$8,000, as compared with $1,500 the previous year. A number of technical papers were presented at the session in the Engineering Societies Building, one of these being on the subject of Ignition, by Atwater Kent. The proposal was made that the Society should establish an employment service for the benefit of its members, and this was soon after put into practice. It may be pointed out in this connection that the year just past, 1908, following the financial crash late in 1907, was a rather bad one for the automobile industry and engineers had to change their connections frequently.

On June 8, 1909, the Society was incorporated in New York State and thereafter included and "Inc." in its name. The incorporators included B. D. Gray, Henri G. Chatain, A. L. Riker and Russell Huff. Objects of the Society were stated to be the promotion of the arts and sciences of automobile construction, the provision of a place to meet, read and discuss papers in relation to such construction, the publication and distribution of literature in relation thereto, and the maintenance of a library on the subject of automobile engineering.

New Membership Classification

The 1910 annual meeting was again held at the Automobile Club of America, the president, Henry Hess, presiding at the three sessions—forenoon, afternoon and evening. An amendment to the Constitution was discussed (and later adopted) which created a new class of membership—affiliate members, consisting of companies wishing to benefit by the deliberations of the Society. These affiliate members had no vote in the affairs of the Society but their representatives (up to six per member) could take part in the discussions. Moreover, the Society reserved the right to ask for a change in representative without giving reasons therefor. Several papers on timely engineering subjects were read and the discussions centered again to a considerable extent around the car dynamometer of the A.C.A. Laboratory, on which demonstrations were made.

At the time the S. A. E. was organized the industry was divided into two hostile camps, those within the fold of the Association of Licensed Automobile Manufacturers and those without. The former at that time constituted by far the largest group. An urgent need had arisen for the standardization of certain motor car parts, notably screw threads, spark plugs, and tire rims, and in order to put such standardization through in the most convenient way the A. L. A. M. in the fall of 1904 organized its Mechanical Branch, which was composed of the engineers and factory superintendents of the member companies with Coker Clarkson as secretary.

Edward T. Birdsall, research engineer of the Wright Aeronautical Co., whose initiative was responsible for the activity of the S. A. E. during its organization and early struggles. He called the first organization meeting and was elected the first secretary-treasurer

The Mechanical Branch held periodic meetings, and it was customary for members who lived within reasonable distance of the meeting place to drive there in their cars. An outing or tour was usually combined with the meeting, during which the engineers would drive each other's cars, in order to broaden their experience.

The organization of unlicensed automobile manufacturers, the American Motorcar Manufacturers Association, later also formed a mechanical branch, but it had hardly started functioning when the lower court decision (afterwards revised) upholding the Selden patent (September, 1909) resulted in the practical dissolution of this association.

Standardization Work Started

Automobile standardization thus started with the A. L. A. M. Mechanical Branch, which adopted such standards as the screw thread, now known as the U. S. Fine Thread; the spark plug thread, now known as the S. A. E. Standard ⅞ in.-18, and the horsepower formula, now widely used for taxation purposes. The standardization of steels was another subject tackled by the Mechanical Branch. In order to be able to carry on experimental work the Branch arranged with the Henry Souther Engineering Company of Hartford for the use of its laboratory, which thus became the official laboratory of the Mechanical Branch. Henry Souther, who had gained early experience in connection with alloy steels in the bicycle business when doing work for the Pope Manufacturing Co. of Hartford, worked out steel specifications for use in the automobile industry which became the basis for the present S. A. E. standard steels.

In 1909, after the Selden patent had been upheld in the lower court, the "Licensed Association" decided to discontinue its Mechanical Branch. The reasons were said to be of legal character but were never definitely explained in public prints. There can be little doubt that differences of opinion among the mem-

The first members didn't even have a badge to show

Andrew L. Riker, first president and one of the first five organizers of the S.A.E. in 1903. He was then vice-president of the Locomobile Company

bers of the association with respect to appropriations for carrying on the work of the Mechanical Branch had something to do with it. Moreover, with the Selden patent sustained in court it looked as though every automobile manufacturer in the country would shortly either have to join the A. L. A. M. or go out of business, which would have eliminated the *raison d'etre* for a restricted technical organization.

Consequently, in the spring of 1910 an arrangement was entered into with the Society of Automobile Engineers whereby the latter organization became the "successor, heir and assign" of the A. L. A. M. Mechanical Branch. All of the standards and records of the Mechanical Branch were taken over by the Society. At the same time Mr. Clarkson, who had been secretary and record keeper of the Mechanical Branch, became secretary of the Society of Automobile Engineers, of which he was made general manager.

This turn in the course of events was undoubtedly one of the most fortunate in the entire history of the S. A. E. Not only did the abandonment of the Mechanical Branch do away with duplication of effort and eliminate a certain rivalry, but in Coker Clarkson the Society secured a man of exactly the right qualifications for the conduct of its affairs. Permanent headquarters were established at 1541 Broadway, and from this time on the membership of the Society increased rapidly and its activities generally accelerated at an increased pace.

First Three-Day Meeting

The new regime had its first inning at the summer meeting of 1910, which was held in Detroit. Whereas up to this time the meetings generally had been limited to a single day, this was a three-day meeting, very much like those to which we are accustomed at the present time. Among the first steps taken was the organization of the Standards Committee with its various divisions, to continue the work of the Mechanical Branch along this line. Numerous papers on an unprecedented variety of subjects were read at the meeting, and technical sessions alternated with visits to automobile and parts plants. The membership at this time was nearly 400.

Up to 1911 the Society had only two classes of members, regular and affiliate, the former being individuals and the latter corporations. Both the regular members and the representatives of the affiliate members were supposed to be engineers. Membership in the Society, however, was keenly sought by many who could not qualify as engineers, because of the opportunity for making valuable business contacts which its meetings offered.

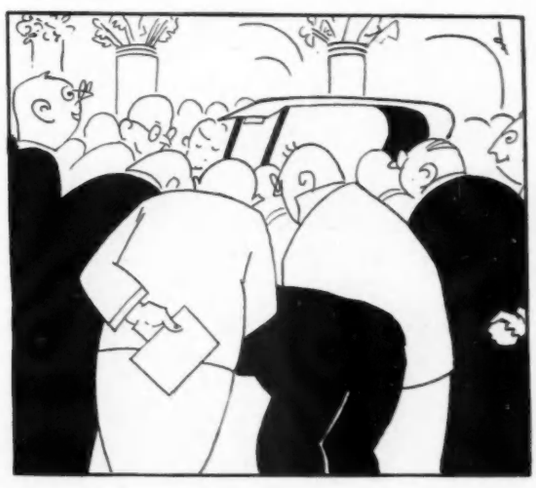
For a long time there was considerable difference of opinion as to the advisability of limiting membership to engineers or admitting all who had any kind of interest in the development of the automobile industry. The faction favoring the latter policy won, and upon the recommendation of a constitutional committee headed by H. F. Donaldson, the class of associate members was established in 1911. Several other changes were made in the Constitution at the same time. It was provided, for instance, that juniors should be transferred automatically to one or the other of the senior grades of membership upon attaining the age of 26, according to their qualifications. Membership dues were raised to a higher level.

Engineering Handbook Begun

In 1911 the Society decided to publish a handbook of data on automobile engineering, the plan apparently having originated with the president of that year, Howard E. Coffin. A committee was appointed to look into the proposition and make a report. This committee recommended that the handbook be published in loose-leaf form and in three volumes, the first to contain the standards and recommended practices of the Society, the second, useful engineering data of a general character, and the third, data issued by manufacturers (mainly sources of supply of the automobile manufacturers who considered this a handy way of submitting to their customers data on their products in condensed form).

This project was later put into practice as far as the first two volumes were concerned. Vol. I contained all of the standards and recommended practices of the Society, while Vol. II was devoted to general information. The first volume has been continued up to this time, although during the last few years it has been published annually in bound form, because neglect of members to insert new leaves when received and eliminate old ones that had become obsolete, led to many complaints. It was automatically kept up to date by the activities of the Standards Committee, which meets twice a year. But the second volume, for

(Continued on page 802)



It was discovered quite early that successful meetings could not be held with the New York Show

WHAT'S going on in the parts replacement field? Will the vehicle maker regain his lost market in competition with the independent parts maker?

This—the second of a series of four articles — reviews what the parts maker has meant to the vehicle manufacturer in supporting the latter's product.

\+ +

THE FIRST — published last week—pictured the car maker's awakening to his loss of replacement parts business.

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THE THIRD—in *Automotive Industries* of May 31—will give the vendor parts maker's outlook in view of the new interest of the car producer.

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THE FOURTH—in the issue of June 14—will show the steps the car maker may take to regain a portion of the replacement parts business.

\+ +

Read the Whole Series!

Parts Suppliers

In building up a profitable business, independent parts manufacturers' activity redounded to benefit of the producer of passenger cars, whom he supplies

THE 26,000,000 automobiles and trucks which are operating in the United States constitute the ultimate market for replacement parts. They make possible profits from the manufacture and sale of replacement parts.

The vehicle manufacturer built and sold these cars and trucks. In this sense, he has created the replacement parts market.

It has been his contention that, having created the market, he is entitled to the profits from such replacement parts sales as may accrue through the wearing out in service of the original parts.

Whether or not this contention is correct is a matter of little moment in the area of practical American business, which has developed largely on the idea that sales will ultimately go to such agencies as render the best service at the lowest cost. That this latter idea works out in practice is amply witnessed by the growth and success of independent parts makers during the last decade or two. The independents not only have taken unto themselves millions of dollars worth of replacement parts business, but have established themselves almost impregnably as supply sources for independent garages and repair shops and as staunch and friendly suppliers to thousands of automobile dealers.

Service for the Car Maker

During this process of building sound, profitable business enterprises for themselves, however, the independent parts makers in general and the vendor parts manufacturers in particular have incidentally performed numerous and concrete services for the vehicle manufacturer. (We are using the term "vendor manufacturers," it will be recalled, for the sake of brevity, to designate those independent parts makers who supply original equipment parts to manufacturers as well as distributing through separate replacement channels.)

To begin with, the average vendor parts makers—and for that matter the average independent parts manufacturer—didn't set out in the beginning to try to steal the replacement business from the vehicle manufacturer.

At one time in the dim and distant past, the vehicle manufacturer had the replacement parts business practically in his own hands. He didn't supply the demand. If he did supply it as regards volume of parts, it is now generally conceded that he didn't supply it as regards price, availability of merchandise, service and so forth.

It was this failure on the part of the vehicle manufacturer which originally left a vacancy in the re-

Bolster Vehicle Makers' Markets

By NORMAN G. SHIDLE

placement parts picture, which the vendor and independent parts makers stepped in to fill. Opportunity stared them in the face. They merely looked up and smiled a recognition.

And it was a good thing for the vehicle manufacturers that they did.

Motor vehicles were being produced at a rate far greater than facilities were growing for servicing them and keeping them in operation. Had not service facilities in the shape of independent repair shops, and parts supplies made readily available through jobber channels and manufactured by independent parts makers sprung up to meet the vital demand for quick service, vehicle manufacturers would soon have found buying of new cars and trucks choked off.

It is not exaggerating to guess that, had parts and service been available only through the efforts and distribution of vehicle manufacturers and their dealers, the number of automobiles operating in this country today would be much closer to 10,000,000 than to 26,000,000.

Aided in Sales

In this sense, the independent parts makers quite definitely helped to "create" a market for new vehicles —the product of car and truck factories—just as much as these same car and truck factories "created" the markets for replacement parts by building these same vehicles.

So the whole matter of who "created" the market after all seems just a little like the argument as to whether the chicken came from the egg or the egg from the chicken.

The vendor parts maker in particular always has been chary of actually fighting the vehicle manufacturer for replacement business. Many vendor parts makers unquestionably first entered the replacement field solely with the idea of protecting the name and reputation of the product which they were manufacturing. They found that their engines, axles, clutches, gearsets or whatnot were being operated in vehicles whose owners could not obtain parts and service through the dealer representing the vehicle manufacturer except at the cost of serious time loss and great personal inconvenience; and sometimes at excessive prices.

In some instances, the reputation for stability and influence of the particular parts makers was greater than that of the particular vehicle manufacturers involved. The parts maker sometimes had more at stake in the way of reputation to preserve than the vehicle manufacturer. While this has not usually been the case, such situations have existed often enough to warrant mention.

Vehicle Makers Lacked Equipment

The vendor parts maker, then, in a majority of instances originally entered the replacement parts field as a means of protecting the reputation of his own and of his customers' products. Naturally he sought a profit from the performance of this service. The replacement parts activities of the vendor parts manufacturer, it appears, have frequently been of very considerable benefit to the vehicle manufacturer in providing for his customers a service which the vehicle makers' own organization simply was not equipped to render. In doing this favor for the vehicle manufacturer, it is true, the vendor manufacturer in many instances established for himself a clientele of customers among independent repair shops and vehicle dealers which showed him the way to increased profits through increased merchandising activity and increased service along these lines.

Whatever the future may hold, therefore, it is only fair to the vendor parts maker to recognize the very

Without the parts distribution effort of the vendor manufacturer, less than half the cars would be on the road today.* * * *

real service he has performed for the vehicle manufacturer during a period when the latter simply has not been equipped to perform that service himself—profit or no profit. The vendor maker has made it possible for "original parts" to be used by independent repair shops long before the vehicle manufacturer made such a thing even remotely likely. Even today the vendor parts maker is the chief agency performing this function; a relatively small percentage of "original parts" are going to independent repair shops through vehicle distributor-dealer channels.

In addition to these purely distribution functions, the vendor parts manufacturer often has borne the lion's share of the inventory burden for his vehicle's customers during recent years. He has built ahead only to have quick cancellation greet his completion of big runs; he has produced normal cost units by overtime work to take care of sudden upward changes in vehicle factory schedules.

Generally speaking he has kept pace with the vehicle manufacturer in the matter of constantly improving his product while constantly lowering the price.

He has been of definite assistance to the vehicle manufacturer in making design improvements. His research laboratories and his engineering department have worked shoulder to shoulder with those of his vehicle customers. His factories and his efforts carry a good share of overhead expense of the industry.

Parts Makers Co-Builders

In every sense of the word, the average vendor parts manufacturer has participated in the trials, problems and desires of his vehicle customers as a willing and helpful partner. He has helped to weather hard times in the past and is helping today. And he has done all this, usually, with a reasonably cheerful smile and an honest determination to help, even if, withal, his face is crossed occasionally by a wry smile in the privacy of his own office. Certainly we're all entitled to that.

Of course, one cannot gainsay the cynic who may interject at this point the remark that: "All this may be true, but after all there's nothing altruistic about it. The vendor parts maker has done all of these things merely because it's good business; he had to do them to hold his customers. He needs the business and knows that if he doesn't do them his competitor will."

One cannot gainsay the statement because it embodies much of truth. But the fact remains that the average vendor parts maker in the automotive industry has had the vision to know what "good business" really is; and that his knowing has redounded to the benefit of the vehicle makers whom he supplies.

Indentical Aims Apparent

These existing facts, it would seem, should constitute an integral part of the background of current and future considerations of relations between vendor parts makers and car manufacturers in regard to the future working out of competition for replacement parts business. The relationship between vendor and vehicle maker thus far has been basically one of almost identical aims. That relationship involves much more, in most instances, than replacement parts alone. The replacement parts feature of the relationship cannot properly be analyzed as an isolated factor.

Particularly do the factors outlined seem worthy of special consideration, when it is recognized that the vendor parts makers have helped to bear these various burdens with the vehicle manufacturer without knowing usually from one month to the next how long he could count on having that particular vehicle account.

The stability of his volume and profits in the replacement field, experience may have shown him in a number of instances, is greater than that of his volume and profits in the field of original equipment.

This discussion may well end on that particular note, because it will play an important part in the development of the next two succeeding articles which will discuss respectively, the replacement parts situation from the practical standpoint of a vendor parts company and the same situation from the standpoint of the vehicle manufacturer.

Chevrolet Improves Its 1930 Passenger Car Line

IMPROVEMENTS made during the past few months by the Chevrolet Motor Company. These include the addition of a harmonic balancer at the front end of the crankshaft, lending greater smoothness to the engine by reducing torsional vibration, and a number of body refinements, making for increased comfort, and better appearance. Among the latter, the closed cars have had the seats lowered about one inch, providing increased head-room and better visibility for tall drivers. The landau sedan has been dressed up, with wire wheels, landau irons and cowl lights now provided as standard equipment.

Open models also have come in for their share of attention. The standard roadster has had its top lowered to the same height as the sport roadster when popular demand indicated that the added rakishness of the lower top was a desirable feature. Further on all open models, scuff plates have been provided and black floor mats have been adopted. On these models also, weather strips have been provided on all doors.

The harmonic balancer now used on the Chevrolet consists of a small flywheel flexibly attached to the front end of the crankshaft, and driven thereby. The driving member for this weight consists of four pins, carried solidly in the crankshaft pulley, and eight banks of leaf springs, five leaves to a spring, mounted in pairs radially in the flywheel. Each pair of springs thus drives the flywheel through one of the four pins.

When the engine is running, any sudden change in speed of the crankshaft will be resisted by the action of the flywheel in the balancer, this resistance bending the leaf springs. These springs of course tend to return to normal, and in doing so deflect the opposite springs of the pairs. Since this cycle of operation is opposed to that of the crankshaft vibration, it will tend to balance out the vibration.

Autocar Six-Wheel Chassis

THE Autocar Company, Ardmore, Pa., announces three new sizes of six-wheel chassis as additions to its regular line. These new models, equipped with 101 hp. six-cylinder engines, four speed transmissions, Timken tandem rear axle units and Westinghouse air brakes, are designated according to their length, namely, Model G has a wheelbase of 125 in.; Model GA. 211 in.. and Model GB, 237 in.

Motorization of the World—Field for Manufacturers

American automobile, despite political and economic disturbances overseas, will play vital part in "wheeled" future of all nations . . . . . .

By A. W. CHILDS

Chief, Automotive Division
Department of Commerce

A. W. Childs

THE number of automobiles in use outside the United States now exceeds the number registered in the United States in 1919, and is nearly five times as great as the number registered in this country at the end of 1914. It required sixteen years, from 1900 to 1916, to add as many vehicles in the United States as were added outside during the last four years. Registrations in countries other than the United States (more than 8,000,000) now total nearly twice the number that were operating four years ago in those countries.

Figures such as these, which indicate the rapid increase in the general use of motor vehicles, are not at all surprising when we realize that the automobile is supplying a specialized, individual service difficult of duplication.

In this great movement throughout the world for more and better transportation, just what position does the American automobile occupy?

Since the American car absolutely dominates the market in the United States and Canada, one gets a much better idea of just how the American vehicle lines up with its foreign competitors in overseas markets by considering its world position, with the exclusion of these two countries. Outside of the United States (Continental) and Canada, there are now in operation approximately 7,000,000 automobiles, and when final figures are known I believe it will be found that fully 40 per cent of that number (if not more) are the products of American plants here or overseas.

In Australia, for example, 83 per cent of the cars are of American type; in British Honduras, 97 per cent; Bulgaria, 44 per cent; Finland, 93 per cent; Brazil, 98 per cent; Denmark, 90 per cent; Greece, 85 per cent; Iceland, 99 per cent, etc.

It is very interesting to note that Iceland now operates 1240 automobiles—550 passenger cars, 650 trucks and 40 buses. To indicate our far-flung automotive activities, I understand that the northernmost dealer is located at Rovaniemi, Finland, while the southernmost is at Pornenir, Tierra del Fuego. Both are understood to handle low-priced American cars.

Our domestic market will, of course, continue to offer the major trade outlet for American production, but the increases overseas in the use of motor vehicles in recent years gives us an indication of the possibilities which lie ahead in those lands. The American motor car, which already leads the field in many of the principal world markets, will play a vitally im-

Ceylon Goes Into High

TRANSPORTATION in far-off Ceylon displays an American tendency in trucks—if not in attire.

portant part in the four-wheeled future of the nations.

From a casual review of import and export statistics, our (favorable) trade balance in automobiles appears high, that is, we export many and import few. But on the other hand it can be shown that the automotive industry is an international institution. Our import trade is essential in the manufacture of automobiles. Also our factories supply to foreign manufacturers a great many parts and accessories.

Regardless of race or clime, once a man owns a motor car, nothing short of a calamity will cause him to give up the use of a machine. This means, then, that as the number of automobile owners overseas increases, with the consequent increase in number of vehicles scrapped, automobile manufacturers should realize a steadily increasing replacement business. When final world registration and production figures for 1929 are available, they probably will show that replacements outside the United States totaled approximately 700,000.

Present estimates indicate that the world production of automobiles in 1929 was approximately 6,300,000. Of this number, 673,000 were produced outside of the United States and Canada—a gain of about 12 per cent over 1928, indicating that other countries are doing all in their power to secure a larger share of the world's automotive business. Nevertheless, our exports alone (United States and Canadian plus assemblies) were greater in 1929 than the entire production of the rest of the world.

At the present time, practically every country in the world is making a supreme effort to increase their highway mileage, realizing as they do that transportation will be a factor of the greatest importance in their economic development. In that regard, just recently I asked a man who had no connection with automotives, what in his opinion would do more to increase our exports in general to China than any other thing. His instantaneous reply was "Sell 'em more transportation." A great many government and private organizations are carrying on extensive campaigns overseas along the lines of highway education to spread the gospel of good roads. Other countries, then, are convinced also that highway transportation will have a most important bearing on their whole commercial and economic life. As this development progresses, our factories will be in a better position to supply the increased demand, which will eventually come for more motor vehicles, than the other producing countries of the world.

In considering the immediate possibilities overseas in automotive lines, it is a fact that political disturbances, world commodity prices, etc., have had their effect on general economic conditions and purchasing power in a number of countries. These markets will continue to have their ups and downs, and automobile sales, just the same as sales of any other commodity, will be temporarily affected; but anything as basic as transportation, and particularly that type of transportation afforded by the passenger or commercial automobile, cannot indefinitely be adversely affected.

There has been some talk of cars being retired from service in certain countries on account of prevailing conditions, but our reports from the field indicate that very few indeed have withdrawn. Now is a period when American manufacturers should watch very closely the stock situation of overseas dealers, being careful not to burden them with excess vehicles. During the last few months when production in this country has been lower than in corresponding periods of a year ago, it is probable that the temptation has been strong to force foreign markets. Nothing would create more harm at the present time than to yield to that temptation.

Taking the long view of the situation, motor transport in every land will continue to grow, and if American manufacturers are to take full advantage of that growth, they will build now on a sound basis by avoiding any merchandising practices which would tend to jeopardize future business in other lands.

R. A. C. Finds Ignition Defect Most Prevalent

THE British Royal Automobile Club in its annual analysis of "breakdowns" reported by members under the club's "Get You Home" service shows that over 20 per cent of roadside hold-ups, necessitating assistance being obtained from the nearest garage, are due to defects of the ignition system of passenger cars. The actual percentage applying to 1929 is 20.3, and is admittedly the lowest yet recorded. Back axle shafts come next with a percentage of 14, and defects under this heading have been steadily increasing in percentage since 1925.

As the accompanying table indicates, cylinders and pistons are the third most prolific cause of trouble, and here again the percentages have steadily increased. The low percentage attaching to carburetion troubles is probably accounted for by the fact that, although hold-ups arising from these are undoubtedly more numerous than the analysis suggests, they are usually of a character enabling the average motorist to overcome them unassisted; for that reason his troubles are not reported to the club.

It will be noted that percentage of breakdowns from accidents has steadily decreased, and although still in fourth place at 12.6 shows considerable progress.

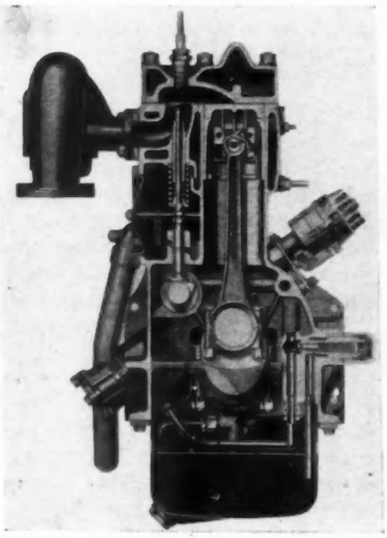
Causes of Breakdowns in England

	1926	1927	1928	1929
Power Unit—				
Ignition	22.5	21.0	22.7	20.3
Carburetion	2.5	2.6	2.6	2.6
Engine—				
Cylinders and pistons	8.0	10.2	10.5	10.9
Timing gear	.9	.7	.4	.6
Valves	.9	1.4	1.4	1.5
Lubrication	2.3	2.7	2.5	3.1
Water circulation	1.7	1.1	2.2	3.1
Crankshaft	.5	.5	.5	.4
Not stated	6.6	6.4	5.8	6.1
Starting	.6	.9	1.0	1.0
Transmission and Brakes—				
Clutch	4.4	4.9	5.1	5.9
Gear box	2.8	3.2	2.6	2.4
Propeller shafts	4.6	4.9	4.1	4.3
Brakes	.3	.2	.1	.2
Back Axle—				
Axle shafts	12.6	13.6	13.8	14.0
Differential	1.2	1.4	.7	.9
Bevels and worms	1.2	.7	1.0	.8
Front axle and steering	4.3	3.1	3.3	2.4
Road wheels and springs	5.9	4.1	4.2	4.5
Lighting equipment	2.1	2.2	2.0	2.4
Accidents	14.1	14.2	13.5	12.6
	100.0	100.0	100.0	100.0

Interior of De Soto closed model

De Soto Reduces Prices

Increased power and acceleration are among the many details of improvement announced by the company for the new six



Transverse section of the De Soto engine, showing the heavier crankshaft

A NUMBER of changes have been made in both the chassis and the bodies of the De Soto Six, which was first placed on the market 22 months ago, and simultaneously with the announcement of the improved model, prices on the line were reduced by from $10 to $35. Both the old and the new prices of the complete line are tabulated as follows:

Model	New Price	Old Price	Reduction
Roadster	$810	$845	$35
Phaeton	830	845	15
Bus. coupe	830	845	15
De luxe coupe ..	860	885	25
4-door sedan ...	875	885	10
Convert. coupe .	945	None	New model

Although they are similar to those on the Chrysler Six, recently announced, the bodies differ in some details. Attention may be called to the new shape sun-visor, the round-off at the sides, the fender parking lights, the smoking or vanity sets in the sedans, the new instrument board with single-button control for the choke, the French roof with metal roof side panels, the wider radiator shell, the adjustable seats in the closed models, the new-shape arm rests, and the three-spoke steering wheel. A convertible coupe has been added to the line.

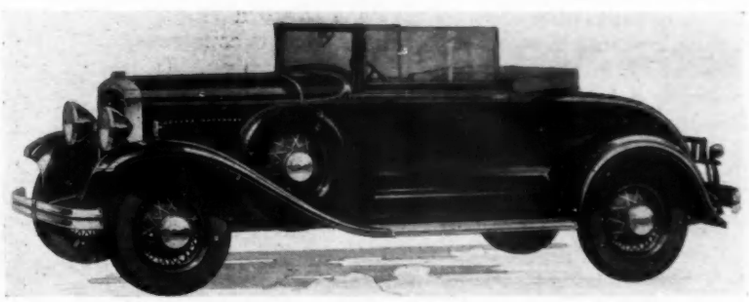
The piston displacement has been increased by increasing the bore to 3⅛ in. from 3, and the engine is now rated at 60 hp. at 3400 r.p.m. No change having been made in either the rear-axle ratio or the tire size, the car naturally has considerably increased acceleration.

The increase in the cylinder bore has been accompanied by an increase in crankshaft weight to 61 lb., but most of the additional weight is in the crank arms and counterweights, the bearings remaining practically unchanged. Piston pin diameters have been increased from ¾ to 13/16 in. Piston rings are wider than formerly but remain of the tongue-and-groove type.

An improved four-point rubber mounting is now used for the engine, and camshaft thrust, which was formerly taken on a steel plate, is now taken by the front bearing, which is of the removable-liner type as formerly but of greater length.

The fuel system is entirely new, consisting of a larger Carter carburetor, a wire-mesh-type air cleaner, an AC fuel pump and entirely new manifolding, with rounded instead of square corners. A fixed adjustment is provided for the heat jacket on the inlet riser. The muffler is longer than formerly.

In the electrical units, the outstanding changes are the adoption of a full-automatic spark advance and of a mechanical shift starter engagement. A steel ring shrunk onto the flywheel takes the place of the integrally cut starter teeth formerly used. Cooling system changes include the adoption of a diaphragm-type thermostat in the water outlet.



Introduction of a convertible coupe accompanies the announcement of the De Soto line. The new model lists at $945

In the clutch a coil spring and friction-disk cushioning and damping mechanism takes the place of the former rubber insert. Transmissions have been improved by the substitution of a roller pilot for a plain bushing in the driveshaft pinion. Improvements are found also in the steering gear, where a roller bearing is now used to take the end thrust. Chrome nickel steel is used for the steering arm.

Bodies are practically of all-steel construction, with a sheet steel underbody and cowl assembly welded to the body side and rear panels. Doors are all-metal, with double panels to give a box-like structure. Roofs are bolted on. Doors are provided with adjustable rubber buffers and it is claimed that the special door latches used provide more than usual protection against rattles.

The overall length of the bodies remain practically the same, but in the sedan there is said to be 1½ in. more headroom in the front, and 1 in. more in the rear compartment. Together with the body changes goes an increase in the length of the frame side rails of about 2 in. Rear springs are slightly longer.

Proposed Standard Brake Linings Rating Test

A PROPOSED Federal Specification for Brake Linings has been drawn up by the Brake Linings Committee of the Federal Specifications Board and is at present being brought to the attention of manufacturers of brake linings and of other interested parties. When finally accepted these specifications will be made the basis for Government purchases.

Selection of brake linings is to be made on the basis of service ratings indicating the relative performances of those brake linings which have met specified minimum requirements in laboratory tests. Manufacturers of brake linings desiring Government business may submit samples of brake lining in regular production by them to the Bureau of Standards for the test and rating.

Tests on the samples will be made by the Bureau of Standards for the value and uniformity of the coefficient of friction, smoothness of operation, ability to withstand the stresses and temperatures incident to the service, tendency to score the drum, and durability—all within the range of test conditions.

These tests will be made on the brake lining testing machine of the Bureau of Standards. This comprises a drum 14 in. in diameter, of cold-pressed steel and ground true and polished on the wearing surface, the drum revolving at 200 r.p.m. Two brake shoes are used, on each of which is mounted a test specimen measuring 2 in. wide by 3 in. long by ¼ in. thick, by means of two 0.145 in. brass rivets spaced 1½ in. apart on the center line.

Each test for rating purposes consists of two series of runs (A and B), each run continuing for three hours, with constant power absorption. Between test runs the equipment is allowed to cool down to room temperature. In series A runs 2 hp. is absorbed, while in Series B 2 hp. is absorbed during the first three-hour run and 4 hp. during each of the succeeding runs. Each of the two series is considered completed when the average thickness of the test specimen is reduced by 0.10 in. If either of the test specimens is materially displaced on its shoe or torn from its rivets, the test is completed and the wear is considered equivalent to that mentioned in the foregoing. If it appears desirable, repeat tests of one or both series are made and the results are averaged.

In order that a brake lining may be given a rating it must complete at least two 3-hour test runs in Series A; during the third and following test runs of Series A the coefficient of friction must not drop below 0.30 and not rise above 0.60; it must complete at least four 3-hour test runs in Series B.

If a lining meets with the above requirements it is given a "service rating" which is determined as follows: The number of 3-hour test run periods (to the nearest tenth) required to complete test series A is known as the "medium-duty factor." The number of 3-hour test run periods (to the nearest tenth) required to complete test series B is known as the "heavy-duty factor." The service rating is the mean between the medium and the heavy duty factor.

Purchases will be made by Government departments of that rated brake lining—offered by the manufacturer thereof or his duly authorized representative—which shows the lowest service cost factor, as determined by dividing the unit cost of the material by the service rating as established by the laboratory tests for the material in question.

New Four-Wheel-Drive Truck

THE Four Wheel Drive Auto Company, Clintonville, Wis., announces a 2½-ton capacity four-wheel driven truck; it is designated as Model HH-6. The truck is powered by a six-cylindered engine of 67 b.hp. This engine has a seven-bearing crankshaft, with a bore and stroke of 3¾ x 4¾ in. respectively, giving a piston displacement of 315 cu. in. The cylinders are cast en bloc, with a removable Ricardo head. A Blue Flame manifold, designed to intensify the explosion power within the cylinders, is used. The oil is forced from a special base, through a complete oil filter equipment.

The clutch is of the dry multiple disk type with eight drive and eight driven disks. The seven-speed transmission, placed amidships, is the equivalent of two four speed transmissions. From the main transmission the power is carried into the center or sub-transmission, located between the front and rear axles. The sub-transmission consists of two silent chain pinions, the 5-in. silent chain, the center differential, all enclosed and operating in an oil bath.

Two systems of brakes, independent of each other, contribute absolute driving safety.

FWD 2½-ton truck chassis

Just Among Ourselves

What's the Red Book Price Allowance on a 1926 Fedora?

AT last! We automobile fellows are going to get a chance to trade something in to somebody else. The hat industry, no less, has been looking over our car junking plans and is said to be considering a hat junking proposition. Sums ranging from $1 to $1.25 are being mentioned as junking prices to be offered to wearers for their old hats. What a profit there would be in getting rid of the old lid for a lot of us automotive gents at these rates!

Details of the project as described by *Daily News Record* and relayed to us through that lively young publication called *Advertising Age*, follow:

"Hat renovators, who have been somewhat of a thorn in the operations of the hat trade, would be approached for the purpose of deciding the actual profit made for the average renovating job. Next, an approximate sum would be struck off for the estimated value each customer places on his hat.

* * *

Hat Junking Plan Has Familiar Lines

"THE hat industry would raise an appropriation to be used for buying in of hats. As an example: The renovator, when asked by a customer to renovate a hat that has passed its usefulness, would offer the customer $1 or so for the outright purchase of the hat.

"In turn, the industry would pay the renovator $1.10, $1.15 or $1.20, whatever sum was necessary to meet what would have been the cleaner's profit if the hat had been renovated.

"All these hats would be turned in to a central organization and this group in turn could, it is said, remill or otherwise make over the hats for a cheap line, or could use them in what is understood to be a ready export market for such merchandise.

* * *

Limited Returns Overcome By Benefit to Industry

"ALTHOUGH the work involved, and the returns made on the milled hats would considerably lower the cost of the campaign, it is said that whatever outstanding cost would result would be more than overcome by the extra business that would develop.

"The proposal as first suggested was that it be tried out in Manhattan and if successful to be spread out into other sections of the country. Merchants, it was added, could be informed of what will take place. It would be necessary, it was added, that the consumer become acquainted with the idea, through his hat store and the renovator. Stores could conduct the plan without the aid of the renovator."

* * *

Is a Time Limit Fair in Furnishing Repair Parts?

SALES efforts of manufacturers of construction equipment are hindered by second-hand, or obsolete, units being sold in competition with the new just as we are in the automobile business. In an article in *Class & Industrial Marketing*, which discusses this question as related to construction equipment, someone is quoted as making that suggestion that "manufacturers refuse to furnish repair parts after the maximum period of the machine's service life has expired."

Certainly such parts probably are slow-moving enough to make their duplication unattractive to parts manufacturers.

Questions which arise, of course, are: "Would that be giving the public a fair deal?" and "Would such action have any material influence toward earlier scrapping of cars?"

* * *

Superiority Complex a Spur to Difficult Achievement

ARE you an individualist? Are you pretty much like the average run of Americans, or have you a set of personal characteristics—hidden or obvious—which in some subtle way sets you apart from the common garden variety of everyday citizen of the United States?

Since you will be answering this question only to yourself, our guess is that you have answered it in the affirmative; you always have felt yourself to be different, even though your Rotary Club speeches may proclaim your pride being the same as all of your fellows. Most of us, down in our hearts, do feel ourselves to be more or less unique; just a little brighter than the average spark struck from the Creator's anvil.

As a matter of fact it probably is the commonness of this feeling of difference which proves our fundamental sameness. Schopenhauer, one recalls, argues that the very fact that every individual does feel himself to be immortal is the best proof possible that there isn't any individual immortality.

Be that as it may, it's this feeling of difference that buoys us up in times of mental depressions and spurs us to achievements which otherwise we would consider beyond our scope. So it's a good sort of superiority complex after all. (All of which are merely a few mental wanderings engendered by having started to read an interesting volume by John Erskine, called "Uncle Sam," which has been out for some time, but with which we have just come in contact, thanks to Paul Hoffman.)—N.G.S.

Car Sales Fluctuate Seasonally With

Variation in the national wage and income totals is the dominant factor underlying the peaks and valleys in passenger vehicle curve * * * Utility secondary to pleasure.

A POSSIBLE new approach to the problem of seasonal fluctuation of sales, particularly within the passenger car branch of the automotive industry, is found in consideration of the fact that in the case of the average individual, capital .resources are defined in terms of wages and income from investments of various types. If these concrete things are themselves subject to seasonal variations, it follows that the purchase of automobiles will be affected proportionately. If the automobile were solely a necessity, it would be purchased as other purely economic goods are purchased, that is, when the necessity arises, with little regard to the psychological conditions of desire and choice. Under existing conditions, however, in spite of tendencies to regard automobiles as necessities, they are actually bought under the conditions which govern the purchase of luxuries. It cannot be argued that the purchase of luxuries is uninfluenced by considerations of utility to the purchaser. But it is argued here that these considerations are secondary and that, for example, increasing the year-'round utility of the automobile will not be sufficient cause for removal of the present exaggerated tendencies in the purchase of passenger cars.

This is exemplified in the fact that improvements in closed-type cars, and tremendous improvements in highways which have occurred during the past few years, have not reduced seasonal buying of automobiles to the point where it ceases to take its toll in heightened production costs and periodic unemployment of large numbers of workers.

The automobile industry set up a Frankenstein monster of consumer buying habit in its early days. During the time when there was no answer to the demand for a car that would be equally comfortable for use all the year 'round the demand for passenger cars naturally centered in the months when there would be the most good to be got from the cars, on the part of the consumer.

The automobile industry set up a Frankenstein monster of consumer buying habit in its early days, when there was no demand for a car that would be equally comfortable the year 'round. * * * * * *

This condition has been intensified by the economic factors of increased wage and income totals during the spring-summer period.

The problem of ironing out the peaks and valleys of sales seems almost impossible at present, when all contributory causes are carefully considered. * * * * * *

Desire and Choice Not Independent

The subordination of utility as a factor in the purchase of luxuries to the more volatile considerations of desire and choice, does not mean that the latter two are independent of economic considerations. Other things being equal, necessities will be purchased at the moment when they become a necessity, but the purchase of luxuries will be deferred until such a time when the economic resources of the individual are in a favorable condition. This is particularly true when the purchase of luxuries involves, as in the case of most automobiles, a considerable outlay of capital.

Behind the excessive seasonal fluctuation in the sales, for example, of passenger automobiles, as contrasted with the relatively regularized sales curve in the commercial car field, lies the fundamental concept that truck purchases are based on a rationalized economic program, which emphasizes the use of the vehicle rather than the "pleasure of the purchaser." It follows from this that a commercial vehicle will be purchased when the need arises. This necessity follows, of course, from, and is dependent upon, changes in the structure and requirements of an individual business, and of the general economy of a given period.

In the case of passenger car purchases a new and fluctuating entity is introduced, the opinions and prejudices of the purchaser, complicated by his subservience to the general economy, of whose determined operations he is often unaware. Too much emphasis has been placed upon the "necessity" of the passenger automobile in the present civilization, and from this has arisen a distorted view of the "reasons" for the wave of buying which assails the passenger car industry in the months of April and August.

Considering the years 1927, 1928 and 1929, a study of fluctuations of factory payrolls for all the industries in the United States shows that during the months of December and January, usually low points in the automobile sales picture, the payroll index is at its lowest point for the years under consideration. The consequent reduction in buying power must be reflected

Buying Power

By HERBERT HOSKING

in the decreased purchase of all economic and particularly luxury goods.

Another side of the annual December-January slump in the automobile business is the consideration that because of the climatic exigencies of winter, money is diverted to the purchase of luxuries other than the automobile which contribute to the comfort of the individual. Among these may be included radios, oil burners, washing machines and other goods which are now commonly purchased on the instalment plan. Support for this argument is found in the fact that in 1929 the amount of commercial paper covering automobile equities reached its apex in the month of May, while the index of the total amount of commercial paper outstanding reached its high point in December and January, a time when automobile sales were lowest.

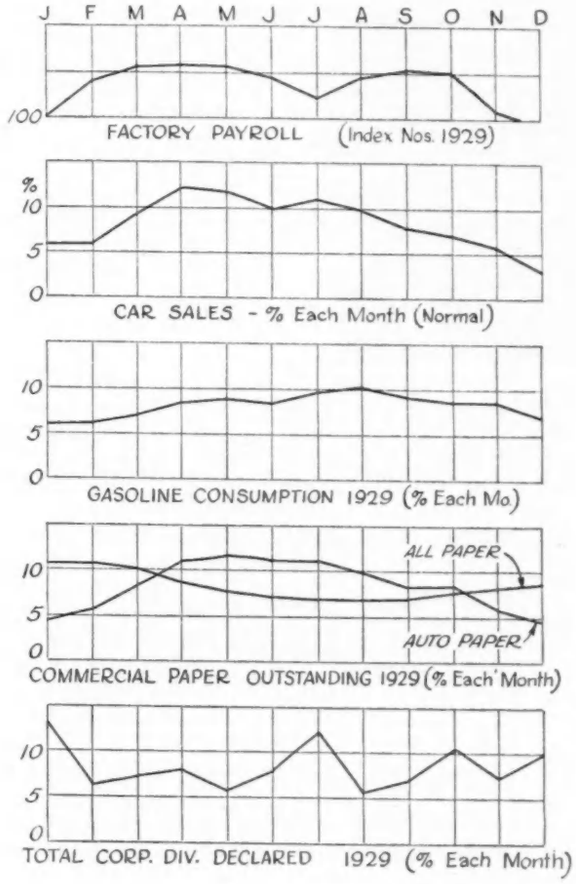
On the other hand, when the general payroll index is highest, then also are automobile sales in the most healthy condition. It is significant that the slopes of the automobile sales curve and the general payroll index curve by months, show the same tendencies of rise and fall. That the rise in the general payroll index is a cause of increased sales of automobiles rather than an effect of increased automobile production is indicated by the fact that the payroll index of the automobile industry itself shows a slight lag in relation to the general index. A more exact picture of this relationship will be possible when the Michigan Department of Labor payroll figures shall have been collected over a longer period. Further weight is given the argument that increased general payrolls are a cause rather than an effect, by the fact that the construction industry is commonly getting into action with the advent of the spring season.

First Quarter Profits Added

The ending of the first quarter of the financial year on March 31 liberates the profits of first quarter manufacturing operations for the purchase of consumer's goods.

Building and loan associations commonly have series arranged to be maturing at the beginning of the spring season, which increases the sum of liquid consumer capital available for the purchase of goods. There is good reason to believe, from these indicating straws, that the amount of mobile capital available to the average consumer is larger at the outset of the spring-summer period than at other times during the year.

Given this situation, and faced with the fact that the passenger automobile, from the user's viewpoint, is of superior utility during the warmer months, it seems inevitable that sales of automobiles will react upward accordingly.



The concept of buying power as a seasonally fluctuating medium is presented as offering a fresh approach to the problem of seasonal variations in the sale of new passenger cars. Additional fluctuating entities which affect the sales picture might be charted in great numbers. Those presented above are regarded as typical

Shorter hours of labor during summer, occurrence of the vast majority of vacations during this period, and the seasonal lengthening of days, all tend to increase the number of available hours during which the prospective purchaser may use his automobile.

The introduction of Daylight Saving time in urban communities has recently been reflected in increased use of motor cars.

It is these things which have their share in imbuing the consumer's mind with the desire of purchasing a new automobile, or simply an automobile. Assuming the awakening of this desire, the purchase of an automobile awaits the occurrence of favorable economic opportunity. Whether it is a fortuitous accident that this opportunity should occur at a time when the desire of ownership seeks an outlet, it is not within the province of this article to discuss. The possible effects on this situation of a change in the seasonal distribution of automobile advertising and of changing the dates of the National Automobile Shows may only be suggested.

The S. A. E. at Twenty-Five

(Continued from page 791)

The election of Coker F. Clarkson as secretary and general manager of the S.A.E. in 1910 marked the turning point in the growth of the society. His interest has been one of the strongest for 20 years

which the machinery for constant addition of material and for revision was lacking, soon developed signs of obsolescence, and its publication was discontinued. The handbook was first placed in the hands of members at the summer meeting in 1911.

Standards in the Balance

At this meeting an animated discussion arose between the protagonist and the antagonists of standardization work. Steel makers on the whole did not look on the standardization movement with any particular favor. They had always sold their products under brand names, and the customer usually had taken what was offered him without asking questions regarding its composition. The proposition now was that the customer should specify the chemical composition and the steel makers would be asked to guarantee it. The opposition of the steel makers is the more understandable when it is realized that at that time the tonnage required for automobile production was as yet relatively small, only about 5 per cent of what it is today. However, the strong personality of Henry Souther, who was originally responsible for this line of standardization work and whose personal experience covered both the steel mills and the manufacturers' side of the problem, eventually carried the day, and standarization of steel specifications became an accepted policy.

There was opposition also to other lines of standardization, and as late as 1914 an attempt was made to secure a showdown on the subject. As regards finished articles of manufacture, standardization consists largely in limiting to the practical minimum the number of different sizes in which the article is made. In the end this is undoubtedly of benefit to all makers, but such a reduction in number of sizes is evidently of much less importance to the maker who is already well established and prepared to furnish practically all sizes normally called for, than to the newcomer. Hence it was feared by some of the large concerns that standardization would over-stimulate competition by making it too easy to get into the business. However, the standardization policy of the Society was again upheld by the membership and it has never been seriously challenged since.

At this same annual meeting of 1911 Professor Rolla C. Carpenter of Cornell University called attention to the fact that the German Automobile-technical Society had established an aviation branch, and he suggested that the S. A. E. do likewise. However, at that time interest in flying in this country was very limited, and since the engineering members had plenty of automobile problems, nothing came of this proposal.

Airplane flights at the Wright flying field formed one of the entertainment features at the 1911 summer meeting in Dayton, Ohio. At this meeting visits were made to the plants of the National Cash Register Company and the Dayton Steel Foundry Co. (manufacturers of cast steel wheels). The standardization of broaches for splined fittings and of gear shift positions were subjects introduced at this meeting, while the best relation of bore to stroke was an interesting topic of engine design discussed.

It was in 1911 that the first local sections were formed, those in New York, Detroit and Philadelphia.

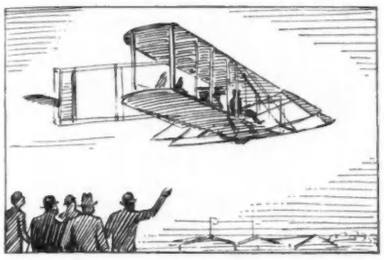
In the Fall of 1911 a party of about 40 members made a trip to England and France under S. A. E. auspices, sailing on the Mauretania. They visited the Olympia automobile show, Brooklands race track, the large garage of the London General Omnibus Company and the National Physical Laboratory, and they had a joint meeting with the Institution of Automobile Engineers. From London they proceeded to Paris, where they were entertained at the Automobile Club of France and visited automobile plants in the suburbs. A second European trip was under preparation in 1914 when the outbreak of the world war frustrated the plans.

Official Bulletin Printed

In May 1912 the S. A. E. removed from its original headquarters to the then new United States Rubber Building, where it occupied a floor space of 1500 sq. ft. on the eighth floor.

During the Spring of 1912 the publication of a monthly periodical, the S. A. E. Bulletin, was begun. Up to then members had been informed of the doings of the Society by means of mimeographed sheets, and

The S.A.E. played an important part in the Big Parade of 1917-1918



Airplane flights by the Wright brothers were a feature of the 1911 meeting

the Bulletin naturally greatly facilitated this information service.

The summer meeting of 1912 was the first of three held on board of lake steamers on cruises of the Great Lakes. The sessions of the first day of this meeting were held at the Hotel Pontchartrain, Detroit. On the evening of that day members boarded the steamer, which carried them to Mackinac Island the following day and back to Detroit the next day. Unfortunately many of the members had waited till the last moment in making their reservations, and the accommodations on board proved rather inadequate for the size of the party, hence the trip was not an unqualified success.

At the summer meeting of 1913, which was held at Detroit, the Society was host to a party of British engineers, including J. B. Dunlop, inventor of the pneumatic tire. Upon their arrival in New York these visitors were entertained by the Metropolitan Section. From there they went to Pittsburgh, where they inspected steel plants; then on to Indianapolis, where they took in the Speedway 500-mile race, and finally to Detroit, where meetings were held and leading automobile plants, such as those of Ford and Cadillac, visited.

Summer Meeting in East

In 1914—the discomforts of the previous year's summer cruise still being fresh in the memory of those who had taken part in it—the summer meeting was again held on land. This was the first summer meeting held in the East—at Cape May, N. J. It is interesting to record here that the tenth anniversary of the Society was celebrated at this meeting. The membership then had nearly reached the 2000 mark. The Constitution was again changed in a number of respects. Up to that time the nominating committee had been appointed by the president, and it was realized that this practice involved certain risk of cliques getting control of the Society and perpetuating themselves in office. A new rule was therefore established according to which each of the principal sections was to elect one member to the nominating committee, while two additional "members at large" were to be elected at the annual summer meeting, it being stipulated that no two members of the committee could be from the same district. This plan of electing the nominating committee has remained in force ever since, with minor modifications.

A rather poor attendance marked the 1915 annual meeting, held in New York at the time of the automobile show, the reason assigned being that most members present at New York were so busy at the show that they found it impossible to attend the technical sessions. It began to be realized that the meeting could not be successfully held in connection with the New York show.

In May, 1915, the Society changed its headquarters from the U. S. Rubber Building at Broadway and 57th Street to the Engineering Societies Building at 29 West 39th Street, where it is still located. The Engineering Societies Building had been erected about ten years earlier with the aid of funds provided by Andrew Carnegie, as a permanent home for national engineering societies. It was taken possession of by the American Society of Mechanical Engineers, the American Institute of Electrical Engineers and the American Institute of Mining and Metallurgical Engineers, the S. A. E. at that time being only a small organization. One of the advantages of the Engineering Societies Building as a home for the S. A. E. is that the largest engineering library in the country, which was originally formed by combining the libraries of the three large engineering organizations above mentioned, is located in that building and is accessible to members. The Standards Committee in 1915 decided to hold four meetings annually in future, instead of the two held previously in connection with the annual and summer meetings.

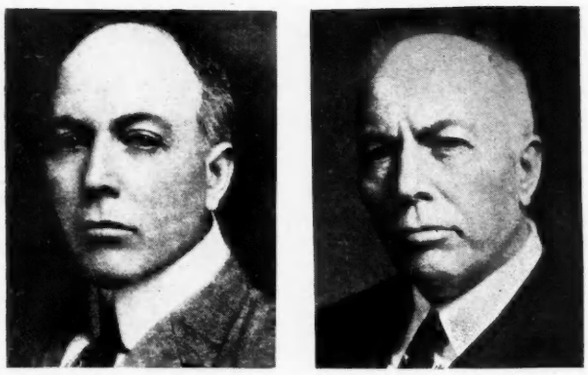
Both of the 1915 and 1916 summer meetings were again held on board ship on the Great Lakes, and proved highly successful. The large steamer Noronic was chartered, so that accommodations were adequate, and all of the sessions took place on board, the cruise lasting four days and taking in Mackinac Island, Killarny, Ont., and Georgian Bay.

Navy Asks Aid

In 1915 the Secretary of the Navy requested that the S. A. E. appoint two members to act on a Naval Advisory Committee. A considerable number of nominations were made by the Council, from among whom A. L. Riker and Howard Coffin were elected by membership ballot. As a result of the war in Europe there was much activity in this country in the development of both aircraft and farm tractors. Shortly afterward the "preparedness" move swept the country. The Government desired that the industries should be prepared to produce both aircraft and farm tractors as rapidly and as efficiently as possible, and it was felt that of all the industries of the country the automobile industry was best fitted to engage in these activities. Accordingly a request was made to the S. A. E. to enlarge the scope of its activities and take in aircraft engineering, tractor engineering and engineering connected with other applications of light internal combustion engines.

The proposition came before the membership at the 1916 summer meeting, and it was decided to change the name from Society of Automobile Engineers to Society of Automotive Engineers (which left the widely-used initials of the Society the same). At the same time it was decided to increase the number of

Hiram Percy Maxim, who, although he has since strayed from the automotive field, was among the nine members attending the first meeting of the S.A.E.E. in November, 1903



Thomas J. Fay, who was the second president (1908) of the Society. He was also editor of The Automobile (an ancestor of Automotive Industries). At the left is Mr. Fay as he appeared 25 years ago

vice-presidents from two to five, one first vice-president and four second vice-presidents, each of which later represented one particular field of application of the internal combustion engine. Several years later when marine engineering was also included within the field of the Society's activities, the number of second vice-presidents was increased from five to six. It was foreshadowed at the time that this action of annexing the fields of aviation, tractors and stationary engines would have the effect of greatly increasing the membership, which stood then at about 2000.

The new method of electing the nominating committee by having each of the major sections nominate one member and have two additional members elected at the summer meeting was finally adopted at the 1916 summer meeting. A class membership known as service members, open to members of various Government Departments (at reduced initiation fee and reduced dues but without vote), was instituted at the same meeting.

Adopt Aircraft Standards

The annual meeting of 1917 was held in New York and was a departure from previous meetings in that it was restricted to a single day. At this meeting the first aircraft standards were adopted. Interest in aircraft developed rapidly and a special aeronautical meeting was held in New York under S. A. E. auspices in February of that year. The Naval Advisory Committee had since been reconstituted as the National Advisory Committee for Aeronautics.

The 1917 summer meeting was held at the Bureau of Standards in Washington and was entirely under the influence of war activities. The attendance was unusually large, and all of the technical sessions were well attended, as there were not the usual attractions to divert the attentions of members. Papers on aircraft, tractors and trucks bulked large in the technical program, and Secretary of War Newton D. Baker was the principal speaker at the dinner. Representatives of the British and French air services were present.

The S. A. E. took a very active part in the development of automotive equipment for the Army and Navy during the war. Aircraft production was placed under the control of the Aircraft Production Board, which consisted chiefly of automotive men, such as Howard E. Coffin, Sidney D. Waldon and Edward A. Deeds. It was also decided to develop a number of standard trucks for the Army, and designs for these trucks were carried through under S. A. E. auspices, committees being appointed from members of the Standards Committee to design the engines, transmissions, axles, etc. The expansion of the scope of activities had a strong effect on the membership, and nearly 1000 members were added in 1917.

The annual meeting of 1918 was another one that was devoted practically entirely to war problems. Col. J. G. Vincent gave the first details of the Liberty aircraft engine, and Howard E. Coffin spoke on the aircraft production program at the annual dinner at the Hotel Biltmore, New York, which was attended by more than 1000. Liberty engine production problems were covered by Henry M. Crane.

Standardization of aircraft parts and practices was carried through at a rapid rate.

The 1918 summer meeting was held in Triangle Park, Dayton, Ohio, and was notable for the fact that all kinds of automotive war equipment were exhibited and demonstrated, including aircraft engines, aircraft, tanks, tractors and trucks. The attendance exceeded 1000.

The 1919 annual meeting was again held in New York, in the Engineering Societies Building, but in February instead of in January, the automobile show being equally delayed as a result of the war. The papers and discussions were still devoted mainly to war topics, as most of the members had been engaged in the production of war equipment during the past year and their thoughts had centered on the problems connected with such equipment.

Subject Sessions Introduced

New plans were thought out and tried from time to time with the object of making it possible for members to attend the reading and take part in the discussion of papers on subjects in which they had a particular interest, with a minimum loss of time. Thus in 1917 the plan was tried of setting a definite time for the beginning of the reading of each paper on the program. This was in line with the military spirit which was then percolating through all fields of human endeavor. The plan was difficult to adhere to and hardly calculated to make the most of the opportunities of the sessions, as the interest and persistence of the discussions on different papers could hardly be accurately gaged in advance. Some years later another plan was introduced, that of devoting an entire session to papers on some general subject, such as engines, bodies, fuels, etc. This was found more practicable and has survived up to the present.

In 1921, during the presidency of David Beecroft, the S. A. E. formulated and adopted plans for the more active support of research work relating to automotive subjects, and Dr. H. C. Dickinson, who previously had been in charge of the automotive power plants division of the Bureau of Standards, was appointed director of research of the Society.

The Society some years previously had made an arrangement with the Bureau of Standards whereby the latter was to conduct research made necessary by the various activities of the Society. This relation had been disturbed by the war, when the Bureau was engaged practically exclusively on war problems for the Army, Navy and other Government Departments. Since the Bureau was greatly enlarged during this period and war problems were no longer occupying it to any extent, it desired to place its facilities at the disposal of peace-time industries, and there was evidently no industry which could utilize them to greater

advantage than the automotive industry. The new step taken did not contemplate that the Society should carry out research independently, but rather that it should act as an intermediary between the industry and institutions prepared to do the actual work, so that the industry as a whole might derive the most benefit from whatever research of an automotive character was conducted at government and institutional laboratories.

In explaining the objects of the Society's Research Department in an address before the Detroit Section, Dr. Dickinson pointed out that works' laboratories were engaged mainly in development work, trying to solve problems relating to their own particular product. A large fraction of all research, however, had to do with fundamental problems in which all automobile manufacturers are concerned equally, and the Society would confine itself to research dealing with such problems.

One of the pressing problems at the time was to adapt the engines produced by the factories to the fuels marketed, and vice versa, since the grades of fuel offered at gasoline stations had changed very much for the worse during the war period. To this end the S. A. E. joined hands with the American Petroleum Institute, and at the annual meeting of the Institute in December, 1921, addresses on the fuel problems of the automobile industry were made by several representatives of the S. A. E.

Post-War Problems

The problems of post-war automobile engineering are well reflected by the designation of the various sessions of the 1922 annual meeting at the Engineering Societies' Building, New York. There were sessions devoted to research, lubrication, fuels and engines, motor truck transportation, passenger cars, body engineering and materials, two sessions usually being held concurrently.

Shortly after the establishment of the Research Department a cooperative fuel research program was inaugurated which is still under way. The experimental work is being carried out at the Bureau of Standards, while the expenses are being borne jointly by the S. A. E., the American Petroleum Institute and National Automobile Chamber of Commerce.

With the progress of the industry new problems arose continually, and the S. A. E. broadened its scope to cover these in a proper manner. After the depression in 1921 the problem of economic production became of prime importance to the industry, and accordingly the Society held it first production meeting at Detroit in October, 1922. This production meeting now has become an annual feature. Production activities brought an entirely new class of men into the Society.

H. Vanderbeck, engineer of the Timken Roller Bearing Co., was one of the nine men asked to attend the first organization meeting of the Society in November, 1903. At the left is an early photograph of Mr. Vanderbeck

Henri G. Chatain, chief engineer, Hammerill Paper Co., one of the nine original members of the S.A.E. and one of the Society's incorporators. At the left is Mr. Chatain in 1905

Another development that attracted the attention of the S. A. E. about that time was the placing of automobile service on a sound commercial basis, and the first meeting devoted entirely to service problems was held at Chicago during the early part of 1923. The papers dealt with such subjects as the Flat Rate, Cooperation Between Factory and Dealer, and the Effect of Standardization on Maintenance Problems. This meeting was followed the next year by a joint service meeting of the Service Committee of the N.A.C.C. and the S. A. E. in Dayton, Ohio.

First Transportation Session

The transportation meeting, which is now an annual feature of S. A. E. activities, was inaugurated at Cleveland in April, 1923. The truck branch of the industry was suffering from a severe depression at the time, due to over-expansion during the war period, and bus transportation was being expanded as rapidly as possible. This raised questions as to the proper relation between road and rail transport, and the first transportation meeting was notable for the presence of numerous persons of high standing in other lines of transportation.

The difficulties connected with holding the annual meeting in New York during the period of the automobile shows there had become plainly apparent before the war. They had been overcome to a considerable extent during the war period by the enthusiasm aroused by the war activities of the S. A. E. and the fact that its new classes of members connected with the aviation, tractor and stationary engine industries were only indirectly interested in the automobile show, hence the competition between the meeting and the show was not so keen as formerly.

After the war, however, the same symptoms of members being kept away from the technical sessions by duties at the show became painfully apparent

Herbert Chase, at one time associate engineering editor of Automotive Industries, who demonstrated a chassis dynamometer at one of the early meetings of the S.A.E. (1909)

A. Ludlow Clayden, who, as the technical editor of Automotive Industries, also served as chairman of Standards Committee of the S.A.E.

again, and so in 1923 it was decided to hold the technical sessions of the annual meeting in Detroit in future. Since 1924 all annual meetings have been held in Detroit, at the time of the Detroit automobile show, which usually follows shortly after the New York show, during the latter part of January. The annual dinner continues to be held in New York, early in January, during the time of the automobile show there, and a business meeting is held also in New York, in order to comply with the articles of incorporation.

At the 1924 annual meeting a Sections Committee was organized with the object of coordinating the activities of the sections in various parts of the country. Some difficulty had been experienced in getting Society members to join the sections in the districts in which they resided, and it was then proposed that the section dues be included in the annual dues of the parent society and collected with the latter, a scheme which has since been put into effect.

In 1924 the Society widened its research program by adding the following items: A study of truck transportation costs with special reference to the effect of highways on such costs; highway tests by the Bureau of Public Roads, the expenses of which are contributed to the Society jointly with the Rubber Association of America; riding comfort, and gear problems. The riding comfort investigation has been carried out for the most part at the Bureau of Standards, and periodic reports on it have been made at the semi-annual meetings of the Society.

At the 1924 summer meeting an amendment to the Constitution of the Society was proposed which permitted of men active in the operating and maintenance branches of the industry joining the Society. This amendment was adopted the following year.

The Dayton Section in 1924 decided to award a medal annually for the most meritorious contribution to aeronautical science reported to them during the year, to be known as the Wright Brothers' medal.

The 1925 annual meeting at Detroit was notable for the exhibition of a large number of instruments specially devised for investigating problems in automobile engineering.

In 1925 a program of lubrication research was started, in which a number of prominent manufacturers collaborated, the work being done at the Bureau of Standards. A feature of the summer meeting that year was a highway safety session at which Dr. Dickinson first propounded his rule of highway safety, to the effect that "no vehicle shall be operated at a speed greater than that at which the driver can stop it within the assured clear course ahead."

There has been considerable further increase in membership of the Society during the past two or three years, no doubt largely because men in charge of transportation enterprieses and service plants are now being admitted. The broadening of the scope of the Society's activities, while it has led to an increase in membership, also has led to difficulties of a kind familiar to the older engineering societies which cover a much wider field, namely, that a great many of the members are specialists and are interested in only one phase of the Society's work. It has been sought to meet this situation by creating what is referred to as "activities." In 1929 eight "activities" were created, as follows: Aircraft, aircraft engine, Diesel engine, motor truck and motor coach, passenger car, passenger car body, production, transportation and maintenance. Each of these activities will be represented on the council by its own vice-president.

Another change made recently is to do away with the office of first vice-president. Previous to that time it was an unwritten rule that the first vice-president of one administration became the candidate for the presidency for the next administration. Thus the nomination for president was really made a year in advance.

At the beginning of the current year the Society had 6693 members, of whom about 500 resided abroad. The membership is now divided into the following classes: Foreign members, service members, members, associate members, junior members and affiliate members. Almost exactly one-half of the total are regular members. The Society has twenty local sections, most of which hold regular monthly meetings except during the summer period. Ten national meetings and a national annual dinner were held by the Society during 1929, four of the national meetings being devoted to aeronautics, two to motor boats, one to production and one to transportation, while the remaining two, the annual meeting and the summer meeting, were of a general character. The Society's present annual budget is now close to $400,000.

The Founders of the S.A.E.

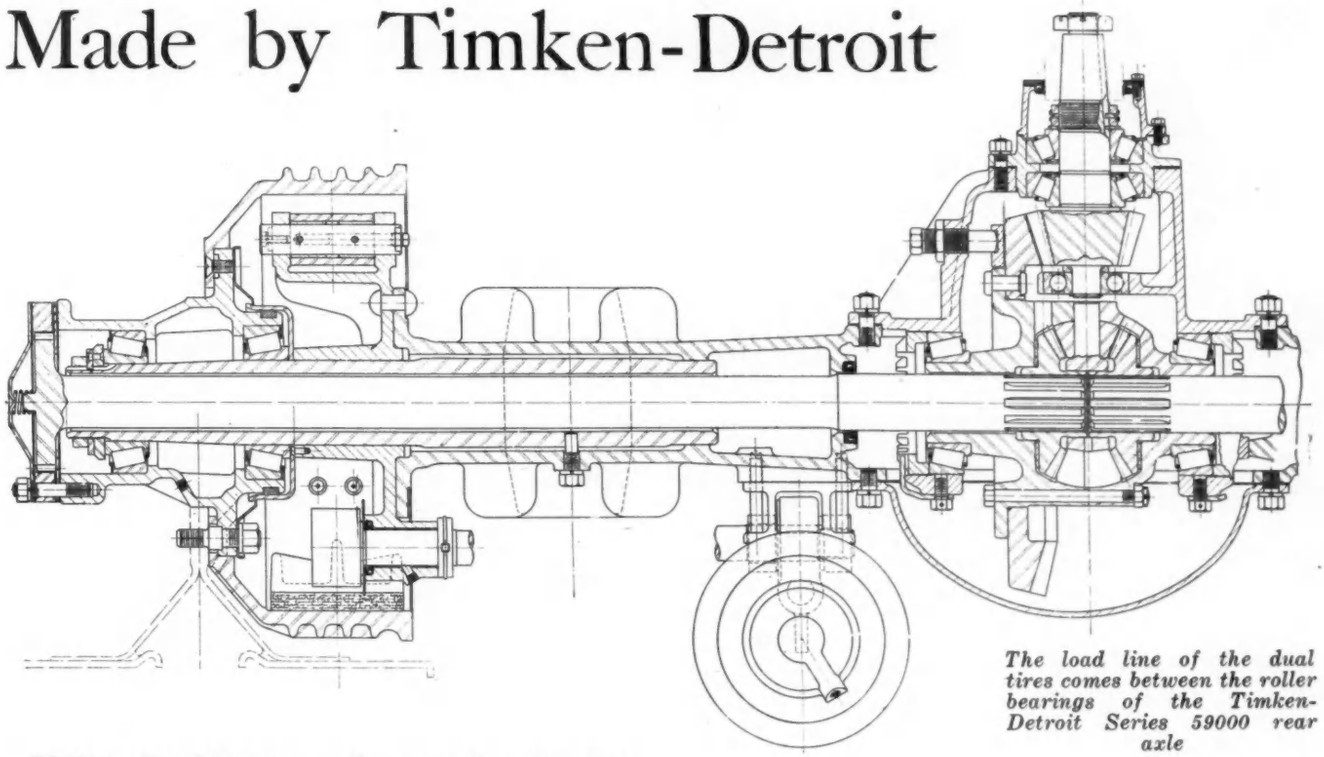
Edward T. Birdsall — Horace M. Swetland
Andrew L. Riker — Julius T. Gibbs
E. T. Whiting

In addition to these, the following aided as

Organizers

H. F. Donaldson — H. Vanderbeek
Henri F. Chatain — Henry Ford

High-Capacity Axle for Buses Made by Timken-Detroit



The load line of the dual tires comes between the roller bearings of the Timken-Detroit Series 59000 rear axle

ONE of the highest-capacity rear axles with spiral-bevel-gear drive ever produced is the 59000 series recently introduced by the Timken-Detroit Axle Co., Detroit, Mich., which is specially designed for use under high-speed, large capacity, intercity motor coaches. It has a load rating of 16,000 lb., including axle and wheel weight, and is designed to take a maximum axle-shaft torque of 1050 lb.-ft. on direct drive.

The axle is of the full-floating type and has alloy-steel seamless tubes pressed into the axle housing proper, which is of malleable iron. In accordance with the usual practice of the Timken company, the axle shafts are made of S.A.E. No. 3240 steel; they have a body diameter of 2⅛ in. and a maximum diameter of 2⅜ in. at the splined inner end.

The axle shafts are forged with integral driving flanges at their outer end. The circumference of the driving flange has spur teeth cut in it. A forged steel driving ring secured to the hub by means of nickel steel studs is provided with internal gear teeth which mesh with the spur gear teeth on the flange of the driving shaft. The shaft is held in place endwise by means of a stamped steel cover plate and spring. This flexible retaining means relieves the shaft of bending strains that might arise from improper adjustment of the wheel bearings.

Brake spiders, of malleable iron, are pressed onto the housing sleeves and are riveted also to the axle housing flanges, the spider being used as backing for the inner bearing cone, to take the thrust from this bearing. Brakes are of the expanding two-shoe type, actuated by a spiral cam, and operated by a Westinghouse air-brake chamber. A Westinghouse worm slack adjuster is mounted on the camshaft for brake adjustment. The air brake chambers are mounted directly on the axle housing, on the inner side of the springs. Brake drums are 17¼ in. in diameter by 5½ in. wide, and of alloyed cast iron. They are ribbed and finned for strength and increased cooling.

The hub flanges, on the outer face of which the brake drums are mounted, are designed to take dual disk wheels with dual 9.75-in. low-pressure tires and 11½-in. tire spacing. The overall width over the tires is slightly under the 96-in. limit set by most states. The nominal axle tread is 74 in. and the distance between spring centers is specified as 43 in. to provide ample clearance between springs and tires. Spring seats are cast integral with the axle housing. Both torque and propulsion are taken through the springs, the axle not being adapted to the use of radius rod attachment. The weight of the 59000 series axle is 1450 lb.

Of major interest, of course, is the bevel-gear driving unit. Two gear ratios are available, 3 8/15 to 1 and 4 1/13 to 1. A three-bearing mounting is used for the drive pinion, consisting of two tapered roller bearings forward of the pinion with the outer bearing cups assembled back to back in a bearing cage, the two thus forming a self-contained unit. Adjustment for end play can be made by screwing up the nut pressing against the forward bearing cone. The rear end of the pinion shaft is mounted in a ball bearing which is supported in turn by a pedestal support integral with the differential carrier. End thrust in both directions is taken by the double forward bearing. It is stated that with this design it is unnecessary to make allowance for linear expansion of the pinion, hence high-angle roller bearings can be used at the forward end, with resultant increase in thrust-load capacity. The gear material is No. 4615 steel.

Carburetor and Valve Specifications May Be Changed in 1931 Race Rules

Present regulations, however, with these allowances, are likely to remain standing for three years, T. E. Myers intimates at meeting of Indiana section of the S. A. E.

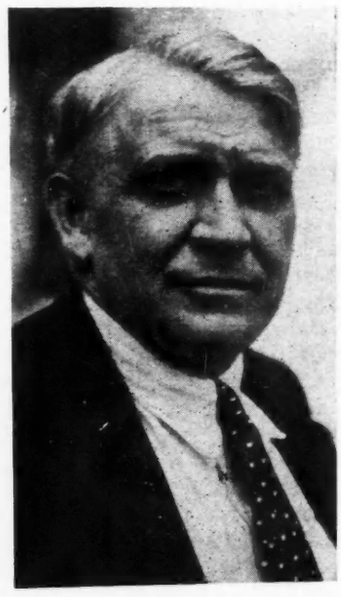
By Harry J. Daniels

THAT the Indianapolis Motor Speedway specifications for the 1931 race will be changed, particularly as regards the number of valves per cylinder and number of carburetors used, was strongly intimated by T. E. (Pop) Myers, vice-president and general manager of the Speedway, in a talk before members of the Indiana section of the Society of Automotive Engineers and a large crowd of the racing fraternity. The meeting was held in Indianapolis on Friday, May 16.

Myers, in reporting the specifications proposed by the International advisory body in Paris, pointed out that in most features these rules followed those adopted by the speedway last year, and added that the differences having mostly to do with the number of valves and carburetors allowed, could be ironed out without much change in Indianapolis specifications. The ban against the supercharger also may be in some danger as suggestions that blowers of the Rootes type might be used brought no opposition from speedway representatives. However, the controlling factor in all this will be found in the race this year which is the test of the new rules and only in case of absolute failures, which seem improbable, will there be any radical changes in the mechanical specifications.

The International body has recommended that motors of five litres be made the limit for size which is one litre less than permissible here this year. It is expected, Myers said, that rules adopted at the end of this race will be effective without major change for at least three years.

Myers in his talk went into the detail of the mechanical design of The Sampson special, sixteen-cylinder car which will use almost the equivalent of two eight-cylinder motors. Each vertical bank of eight cylinders will have its own crankshaft and practically all other parts that go to make up the conventional internal combustion racing motor. Only in fuel supply are the two motor banks dependent on a common factor, Myers said. Even the radiator has been divided vertically and two tanks are used to supply lubricant for the banks. This car is regarded as one of the most radically new in design to be entered for the race this year. Also it is one of the few cars that was built new this year, as most of the others have left-over salvage from racers of days gone by.



Fred S. Duesenberg expects the blower to be returned to race rule specifications

Louis Schweitzer, race driver of some years ago, in a short discussion of Myers' talk, attacked the ban on superchargers with some heat and suggested that the rules of racing should be more open.

Following Schweitzer, Fred S. Duesenberg, designer of some of the famous speed cars of the tracks, said that he regarded the blower an important part of race car design and that he expected to see it return before long, but he added that a large part of the trouble that has taken many of the cars out of the race in the last few years has been gear failure of the supercharger. Duesenberg regarded the limit of two valves to the cylinder as being too drastic, especially with the blower forbidden.

This year's race, with heavier cars than has been the case for many years, has given the tire manufacturer more to worry about than before, said Waldo Stein, racing representative for the Firestone Tire & Rubber Company, adding that this year his firm had found it advisable to offer two sizes of tires rather than one, as has been the case lately. Both sizes are larger than anything used last year with the smaller weighing seven pounds more than last year and the larger adding ten pounds per tire.

Peter DePaolo, race driver, gave his approval to the 1930 rules for the most part, remarking that he regarded the addition of the mechanician this year as a bit of showmanship necessary to give the public a new quirk.

Phil Shafer, speed pilot, provided a large part of the fireworks at the meeting, disagreeing with the rules on nearly every point discussed. He attacked in addition the rule making it mandatory for two men to ride the cars, which already are heavier than anything used for many years. He ended his remarks

by stating that he had several other things to say, but regarded it appropriate to reserve them until he could air them before the Association contest board.

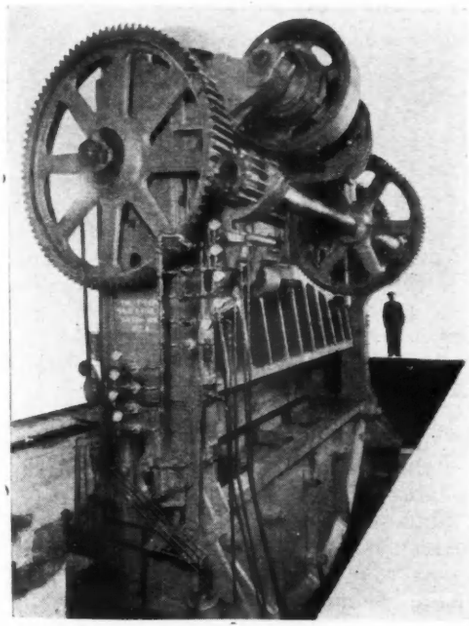
Lee Oldfield, also another veteran of the speed path, was a strong advocate of open rules with limits only where it seemed necessary to guard the safety of drivers and spectators. He said that he felt that any unsound practice would fall by the wayside of its own weight and that by this plan more new factors in car design would be brought out. Taking Myers' assertion that the speedway had served as a proving ground for the industry almost since its founding, he said that the present tight limits did nothing to encourage many to attempt something new and different.

The big point made last year to justify the rule for two men for the cars, that this would give a training field for new pilots that have been becoming fewer as time passed, was not brought out in any discussion.

Toledo Builds Largest Crank Press

WHAT is believed to be the largest crank press that has ever been built has just been completed by the Toledo Machine and Tool Co., Toledo, Ohio. It is to be used for heavy blanking, forming and piercing operations in the manufacture of extra large truck rails and similar parts.

An idea of the magnitude of this press may be had from the following figures: weight of crown about 130,000 lb.; weight of slide about 130,000 lb.; weight of bed complete about 300,000 lb.; total weight about 800,000 lb. The two steel gears on the crankshaft are 140 in. in diameter with an 18 in. face. The bed is 288 in. right to left by 68 in. front to back. The pressure exerted at the bottom of the stroke is 3,500,000 lb. with a comparatively small amount of deflection. The total height of the press from the floor to the top of the arch is 36 ft. and this made it necessary to build the press in a pit, bringing the operating level below the floor line, which will not be the case when the press has been set up for actual operation.



The size of Toledo crank press can be judged by the figure of the man in the background

Notwithstanding the great weight of the moving parts, the slide has been successfully counterbalanced by four air cylinders, two of which are at both the front and back of the press. These counterbalances insure smooth running of the slide which operates at seven strokes per minute.

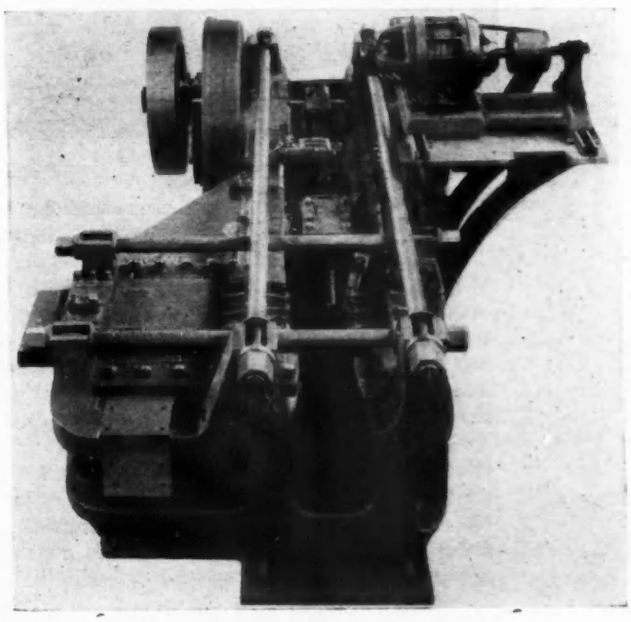
The press is controlled by the Toledo patented improved multiple-disk friction clutch with an independent brake which enables the operator to stop and start the press at any part of the stroke. The flywheel is mounted on Timken roller bearings and is the only part in motion when the press is not in operation. An air-controlled valve operates the clutch mechanism while a hand lever mechanically operated is used for emergency and for setting dies with the control handle in neutral position.

A 150-hp. motor mounted on the rear of the right hand upright and belted to the flywheel furnishes the necessary power. A motor on the front of the press is used for adjusting the slide.

Upsetting Forging Machine

THIS gigantic Ajax upsetting forging machine powered by a 100-hp. motor and weighing 410,000 lb. was delivered early this year to Spang, Chalfont & Co., Inc., Pittsburgh, Pa., by its builders, The Ajax Mfg. Co., Euclid, Ohio.

The crankshaft is driven through twin gearing balanced by two flywheels. Starting is accomplished by the Ajax patented drop lock. Vibration is said to be reduced to a minimum by careful balancing of moving parts.



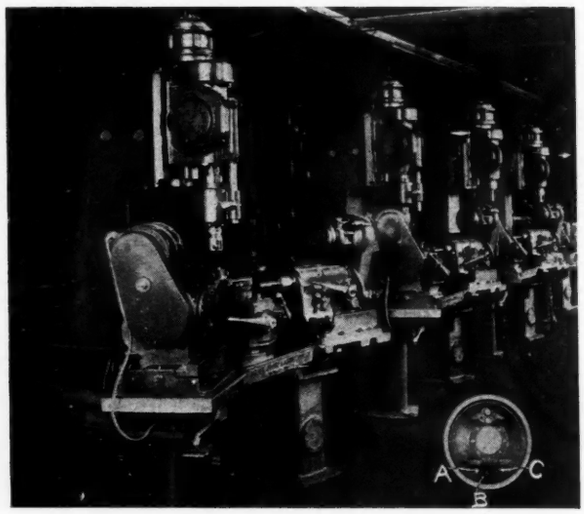
Ajax upsetting forging machine which weighs 410,000 lb.

NEW DEVELOPMENTS—AUTOMOTIVE

Bradford Unit-Built Special Installation

A BATTERY of machines has been developed by the Bradford Machine Tool Company, Cincinnati, Ohio, for performing two progressive operations on a front and rear brake housing hangers. These machines shown in photograph represent a typical adaptation of the unit-built type of special machine tools, as all machine elements such as tables, pedestals, columns and drilling or tapping units are standard units assembled to meet the requirements of this particular installation.

The first operation on the two parts consists of drilling two 15/32 in. holes 1⅛ in. deep at A and C with the horizontal units and counterboring the hole B with a combination tool 1.123 in. and .600 in. diameters. These tools are operating at a cutting speed of 118 ft. per min. on malleable iron and the floor to floor time is



35 sec. each. The second operation consists of reaming the holes A and C ½ in. diameter by 1⅛ in. deep and tapping the hole B ⅝ in. 11 thread. The reamers are operated at a cutting speed of 109 ft. per min. and the tapping speed at 45 ft. per min. The floor to floor time is 24 sec. This layout requires the cutting tools to overlap each other in the same hole and the cams controlling the feed of the individual units are arranged to give an interlocking action on the tools. Accordingly a positive and accurate control of the feeding mechanism is provided by means of a hand valve located at the right front of the machine. This valve connects an air cylinder attached to the tripping levers of the individual heads, insuring instantaneous tripping control and the elimination of tool hazards.

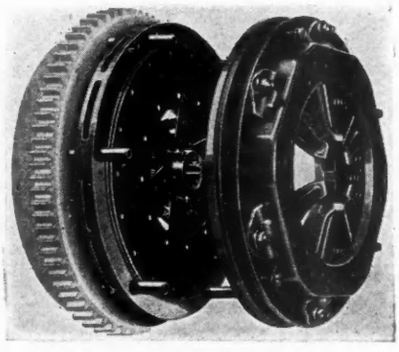
Each unit is equipped with individual motors having individual overload and underload protection. A central control is also provided, enables the entire machine to be started and stopped by means of a push button. A system for the distribution of cutting lubricants is also provided, operated by means of a commercial turbine pump, having an individual motor drive and controls. The pump is mounted at the back of the machine and does not appear on the photograph. One of the pedestals constitutes the tank for the storage of cutting lubricants.

Long Heavy-Duty Model 34-A Clutch

A NEW heavy-duty clutch known as the Model 34-A has been brought out by the Long Manufacturing Co., Detroit, Mich., subsidiary of the Borg-Warner Corp. It is designed for use on trucks, buses and tractors.

The driven plates are made of high-carbon steel, 0.083 in. thick, and are heat-treated and spoked. Two driven disks being used, there are four friction facings. These are 13¾ in. in outside diameter and afford a total of 429 sq. in. of friction area. The two cast iron driving plates have cored passages in them for increased air cooling, and they are exceptionally heavy. The number of pressure springs and number of levers are exceptionally large, to give as nearly uniform distribution of pressure as possible, eighteen of the former being used and six of the latter. Each pressure spring is separately insulated from the pressure plate, to cut down the transmission of heat to it to a minimum, so as to eliminate the danger of the temper of the springs being drawn.

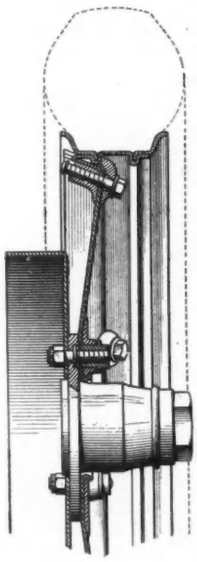
The six release levers are steel pressings. They are made of 3/16-in. stock, heavily ribbed and heat-treated. The cover plate is made of drawn steel for maximum rigidity. All important working parts are made of heat-treated chrome-nickel steel. The torque rating of this clutch for heavy service is 500 lb.-ft.



PARTS, ACCESSORIES AND PRODUCTION TOOLS

Prescott-Rummler Steel Disk Wheel

THE accompanying drawing is of a new steel disk wheel for automobiles, known as the Prescott-Rummler wheel, of which some information has been furnished us by Sidney I. Prescott of 511 Fifth Ave., New York, N. Y. The wheel is not yet on the market but the inventors hope to have it in regular production some time in 1931.



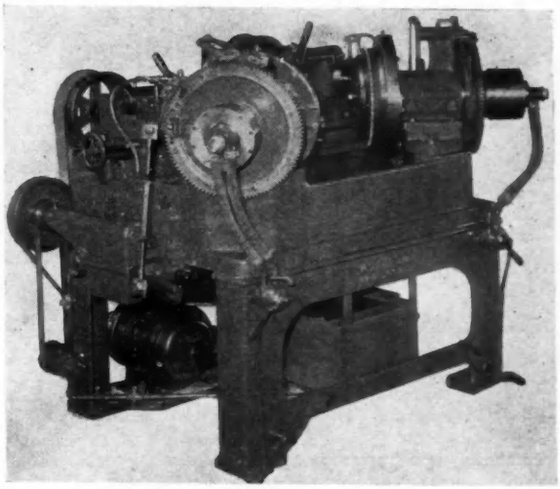
The main body of the wheel is conical. The rim is made entirely of flat stock, comprising a continuous ring base and two similar split tire flanges, the base having an integral driving tongue engaging a slot in the periphery of the body.

Advantages claimed for this wheel include the following: Tire mounts of all three kinds are combined in this wheel, so the wheel industry will be relieved of the burden of making so many different styles of wheel; the demountable body is locked on its hub by the action of the load on the wheel, and is automatically unlocked when the axle is jacked up; vibration is said to be avoided, and rim security to be insured by carrying and retaining the rim-securing devices within the body, to prevent loss of parts when changing rims and tires at the roadside, particularly at night.

Lipe Flywheel Chamfering Machine

EIGHTY teeth per minute per spindle is the capacity of the new two-spindle flywheel chamfering machine recently added by W. C. Lipe, Inc., Syracuse, N. Y. It is electrically driven, and the ring gears are held in place by air chucks operated by foot levers permitting the operator to use both hands for loading and unloading. The average loading and unloading time is 12 sec. A master index ring is used for indexing, thereby insuring accurate chamfering of each tooth. The chamfering operation is accomplished by an internal form ground hollow mill.

The machine is equipped with two 1 hp. 1200 r.p.m. motors, making it possible to run one spindle at a time if desirable. The overall floor

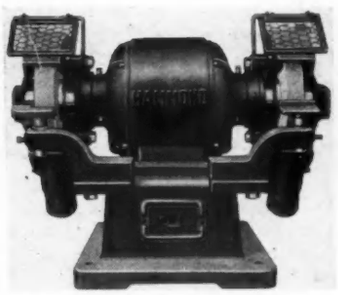


space required is 61½ in. x 44 in. The total height of the machine is 50¾ in. and the distance from the center of the work spindle to the floor, 39¾ in.

Net weight including the two motors is approximately 3080 lb.

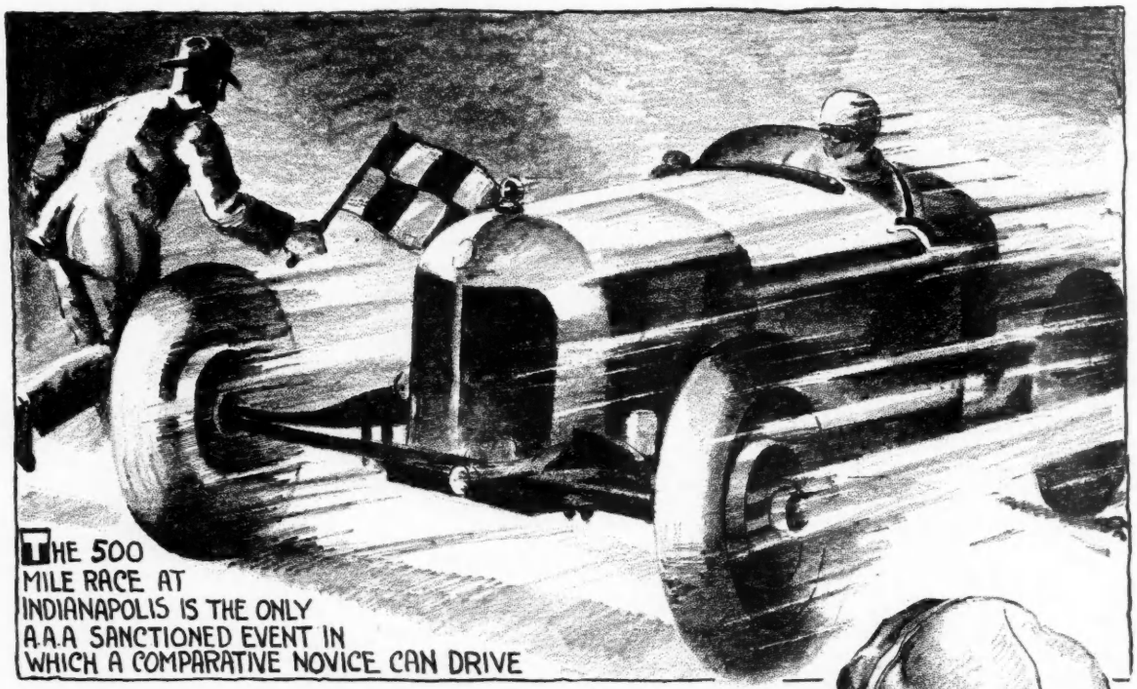
Hammond Bench-Type Electric Grinder

DESIGNED for light duty production and general purpose service, the type W electric grinder in both bench and floor types is offered by the Hammond Machinery Builders, Kalamazoo, Mich. Features of design including the built-in 40-deg. C type motor are similar to those of their heavy-duty 10 hp. line previously described. Standard equipment includes universal adjustable steel wheel guards which can be adjusted to compensate for the wear of wheels, at the same time maintaining the same distance between the wheel and the guard. Exhaust outlets are furnished as part of these guards for convenience of attaching to exhaust system. Shatterless glass eye shields are regular equipment, offering protection and convenience to the operator.



The machines furnished for 110, 220, 440 and 550-volt, 1, 2 or 3-phase alternating current; and for 110 and 220-volt direct current service. 1½ hp. capacity for grinding wheels 10-in. diameter by 1½ in. face; and 2 hp. capacity for wheels 12-in. diameter by 2 in. face.

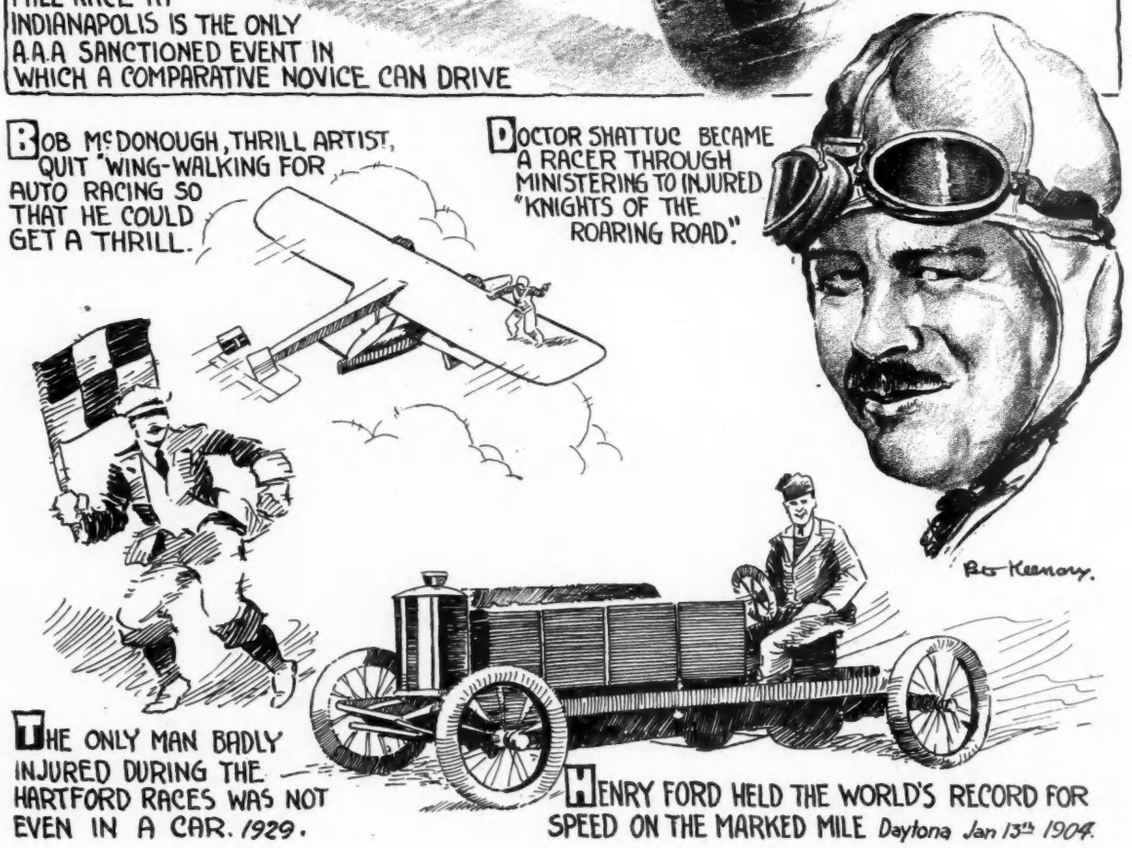
Automotive Oddities *by Pete Keenan*



THE 500 MILE RACE AT INDIANAPOLIS IS THE ONLY A.A.A SANCTIONED EVENT IN WHICH A COMPARATIVE NOVICE CAN DRIVE

BOB McDONOUGH, THRILL ARTIST, QUIT 'WING-WALKING FOR AUTO RACING SO THAT HE COULD GET A THRILL.

DOCTOR SHATTUC BECAME A RACER THROUGH MINISTERING TO INJURED "KNIGHTS OF THE ROARING ROAD."



Bob Keenan.

THE ONLY MAN BADLY INJURED DURING THE HARTFORD RACES WAS NOT EVEN IN A CAR. *1929.*

HENRY FORD HELD THE WORLD'S RECORD FOR SPEED ON THE MARKED MILE *Daytona Jan 13th 1904.*

First with the News

Reliable, Accurate

News of the Industry

PAGE 813 VOLUME 62 *Philadelphia, Saturday, May 24, 1930* NUMBER 21

Ford Canadian Unit Reports 1929 Profit

Earnings Were $5,232,819 Against Loss in Previous Year

DETROIT, May 20—The Ford Motor Co. of Canada, Ltd., earned $5,232,819 in 1929 compared with a net loss of $3,400,651 in 1928, and retail deliveries so far this year are virtually on a level with the corresponding period of last year, according to the report of Wallace R. Campbell, president, at the annual stockholders' meeting yesterday.

Directors of the company have declared a cash dividend of $1.20 per share and an extra cash dividend of 30 cents per share on all of the outstanding shares, payable June 23 to shareholders of record June 2. The board also has signified that the shares hereafter will be on a regular dividend basis of $1.20 per share per annum, payable in June and December of each year, the first of such distributions to be made in December of this year.

Mr. Campbell pointed out that at the end of the year there was an increase of $10,619,010 in cash and $9,044,094 in Government bonds held by the company as compared with the previous year. Of this increase $6,378,980 was additional capital obtained during 1929. There was no bank indebtedness. Inventories amounted to $4,765,086, a decrease of $2,084,872.

The increase in earnings, Mr. Campbell pointed out, resulted from the return to normal operation in 1929 after abnormal charges in the preceding year incident to the introduction of the new model Ford car and truck.

The company's surplus as of Dec. 31, 1929, was $29,762,904, compared with $24,454,684 on Dec. 31, 1928, and with $27,855,336 on Dec. 31, 1927. Total sales and other income in 1929 were $59,840,535, compared with $47,083,132 in 1928. Last year's output, including sales to affiliated companies, was 87,791 cars and trucks, an increase of 12,550 over the preceding year.

The report disclosed that as of Dec. 31, 1929, there were 23,256 Class A shareholders and 3256 Class B shareholders. Of this number, more than 17,000 were Canadian shareholders.

The Export Situation

is summarized in a report of a speech by James D. Mooney, president, General Motors Export Corp.

This Issue, page 815

Kari-Keen Buys Irving

SIOUX CITY, IOWA, May 24—Manufacturing rights and equipment of the Irving Mfg. Co., Buffalo, N. Y., manufacturers of Irving hot water heaters and radiator shutters for automobiles, have been acquired by the Kari-Keen Mfg. Co. of this city, for reported consideration of $300,000.

All machinery and equipment of the Buffalo plant will be transferred here and with operation of that line in the Sioux City plant the Kari-Keen factories will be able to maintain full force on a 12-months basis, rounding out its line to include luggage carriers, coach beds, heaters, etc.

Ford April Sales Increase, Others Decline, for 26 States

PHILADELPHIA, May 22—April registrations of new passenger cars were 26 per cent behind the same month last year in the 20 states and the District of Columbia for which totals have been compiled to date. In this group of states Ford shows a 2 per cent gain, Chevrolet a loss of 11 per cent, while all other makes combined decreased 48 per cent as compared with April, 1929.

Buys De Palma Supercharger

DETROIT, May 20—American Cirrus Engines, Inc., of Marysville, Mich., subsidiary of Allied Motor Industries, Inc., has acquired the supercharger, developed by Ralph De Palma, for airplane, marine and automobile engines, according to an announcement by F. R. Maxwell, Jr., president.

Franklin Adds Sedan

SYRACUSE, May 22—A new sedan model designated the "Transcontinent" is being offered by Franklin dealers as an addition to the 1930 line. It is priced at $2,395, f.o.b. factory, permitting delivery at a reduction of about $200, compared with other Franklin sedan types.

Motor Wheel Buys E. K. Baker Holdings

Is Now in Position to License Other Manufacturers on Patents

DETROIT, May 20—The Motor Wheel Corp., Lansing, Mich., has acquired by direct purchase, all the issued patents and all applications owned by Erle K. Baker and his associates and the Baker Wheel and Rim Co. and the Universal Rim Co., thus removing litigation to which it was threatened and also placing Motor Wheel in a position to license other wheel and rim manufacturers under the patents obtained, according to a statement issued yesterday by C. C. Carlton, secretary of the Lansing company.

Mr. Carlton's statement said: "The rim and wheel industry from its outset has been involved in a great amount of patent litigation. In 1926 the Universal Rim Co. sued General Motors Corp. for infringement of a large number of patents involving automobile rims. In 1927 a similar suit was filed against Motor Wheel Corp. In 1928 Motor Wheel Corp. was sued by Baker Wheel & Rim Co. for alleged infringement of several wheel patents.

"By the purchase of all the Baker patents, numbering approximately 100 patents and unissued applications from the Universal Rim Co. and Baker Wheel & Rim Co., the suits by these companies against Motor Wheel Corp. and General Motors Corp. and threatened suits against other wheel and rim makers will be brought to an end.

"By the acquisition of the Baker patents from the Universal Rim Co., covering the manufacture of split rims of various types, and by acquisition of Baker wheel patents from the Baker Wheel & Rim Co., Motor Wheel Corp. has again, this time with the cooperation of General Motors Corp. and other wheel manufacturers, been able to free the industry of a great deal of troublesome and expensive litigation. It is understood that Motor Wheel will license other wheel and rim manufacturers under the Baker Wheel & Rim patents thus secured."

No announcement has been made naming these companies.

French Group Received By American Engineers

S.A.E. and N.A.C.C. Jointly Entertain Visitors

NEW YORK, May 20—The high example of the spirit of internal cooperation in the American automobile industry, as expressed in the exchange of patents and commercial information, was cited by Alfred H. Swayne, vice-president of the National Automobile Chamber of Commerce and the General Motors Corp., in welcoming a delegation of thirty French engineers, who arrived in the United States May 19 for a three weeks' tour of automotive plants. Mr. Swayne's remarks were made at a luncheon in honor of the French delegation, which was held at the Engineers Club, under the auspices of the National Automobile Chamber of Commerce and the Society of Automotive Engineers.

In welcoming the French delegation, Alfred Reeves, general manager of the National Automobile Chamber of Commerce, pointed out that the American plants to be visited would place at the disposal of the members of the delegation much information regarding factory processes and methods, and that the National Automobile Chamber of Commerce was completely at the disposal of the visitors.

Monsieur Xavier Morand, secretary-general of the Societe des Ingenieurs de l'Automobile, read a response to the addresses of welcome. Austin M. Wolf, automotive consulting engineer, Newark, N. J., welcomed the delegates in French, in the name of the Society of Automotive Engineers.

Following the luncheon at the Engineers Club, the French delegates were escorted to the S.A.E. offices in New York, and the workings of the various departments of the organization were explained. The complete itinerary of the delegation, during its visit to this country follows:

May 19, Monday—Arrived New York.
May 20, Tuesday, 11.00 a.m.—Reception at S.A.E., 29 W. 39th St.
12.30 p.m.—Luncheon at Engineers Club; S.A.E. and N.A.C.C. acting as hosts.
2.45 p.m.—Reception at N.A.C.C.
3.30 p.m.—Chrysler Building.
4.00 p.m.—Visit around city, Woolworth Building, Wall Street, Battery, etc.
6.00 p.m.—Hotel Paramount.
7.45 p.m.—Roxy Theatre.
11.45 p. m.—Depart for Niagara Falls from Grand Central Station.
May 21, Wednesday, 10.13 a.m.—Arrive at Niagara Falls. 12.00 noon—Lunch, after which go to Pierce factory at Buffalo; thence to Detroit boat.
May 22, Thursday—Detroit; Ford plants all day. Ford—Lincoln.
May 23, Friday, a.m.—Packard; p.m.—Long Radiator Co.
May 24, Saturday, a.m.—Hudson, Continental Motor; p.m.—Timken.
May 25, Sunday—Laboratory of University of Michigan.
May 26, Monday, a.m.—General Motors Laboratory; p.m.—Cadillac.
May 27, Tuesday—General Motors Proving Ground, Milford.
May 28, Wednesday—Flint, Buick, Chevrolet, Fisher, AC Spark Plug.
May 29, Thursday—Summer Meeting of the Society of Automotive Engineers, French Lick Springs, Ind.
May 30, Friday—Indianapolis races.
May 31, Saturday—Indianapolis factories or companies in Akron, Cleveland, or others.
June 1, Sunday—Return to Detroit.
June 2, Monday—Hupmobile, Midland Steel and some other plant.
June 3, Tuesday—Chrysler.
June 4, Wednesday—Gemmer and some other plants chosen later.
June 5, Thursday—Budd, Philadelphia, and another Philadelphia plant or Wright Aeronautical factory, Paterson, N. J.
June 6, Friday—Return to New York. Johns-Manville, Vacuum Oil Co., and others.
June 7, Saturday—Return to France on the Rochambeau.

French Engineers Arrive in U. S.

In the party are Raymond A. Babel, general manager of Babel Brake Co.; Maurice P. Berger, director, International Bureau of Automobile Standardization (BINA); Charles J. Boisselot, general manager of Boisselot Accessories Co.; Lucien A. Bollack, Bollack automobiles; Pierre A. Bollee, general manager, Amedee Bollee Piston Ring Co.; Henry J. Bouvier; Pierre C. Burgart; Henry P. Bonal, engineer of Pugeot Automobile Co.; Leon D. Cibie, president, Cibie Headlight Mfg. Co.; Lucien Deolorme, R. B. Magneto Co.; George E. Henry, Chenard & Walcker Co.; Georges H. Lafond; Francois A. Lefebve; Jean S. Marbotte; Luis Marques, Marques Motor Co.; Desire M. Moeglen, Lorraine-Dietrich Co. Automobile & Aircraft Co.; Xavier V. Morand, Seignol Mfg. Co., and member of the board, Westinghouse Brake Co.; Gustave C. Moreux and Gaetan C. Moreux, G. Moreux Radiator Co.; Jean Pierre Pugeot, vice-president, Pugeot Auto Co.; Elie P. Seguy, Bollee Piston Ring Co.; George P. Vandier, Ferodo Mfg. Co., and Leon C. Versepuy, general manager, SAMID

Austin Begins Production

DETROIT, May 21—Production of the American Austin Car Company has been started at its plant in Butler, Pa., it was made known in the general office of the company here today. Dealer contracts already approved, it is said, call for more than 160,000 units and the company has orders for approximately 10,000 units for immediate shipment. The National announcement of the Austin car will not be made until late in June, according to present plans.

Fisk to Aid Dealers

CHICOPEE FALLS, MASS., May 20—The Fisk Tire Company, Inc., will solicit business on national accounts through its dealer organization, instead of from the headquarters of the company, according to an announcement made yesterday by N. B. Brodhead, manager of the Commercial Tire Department.

Marien Joins Ramsey

The appointment of Charles A. Marien to the Engineering and Research Staff of the Ramsey Accessories Mfg. Corp., St. Louis, manufacturers of Ramco products, has been announced by J. A. Ramsey, president.

Manufacture of du Ponts Moved to Springfield

SPRINGFIELD, MASS., May 22—Production of the chassis and bodies of the du Pont car will be removed from Wilmington, Del., to this city soon and henceforth will be carried on at the plant of the Indian Motocycle Co., it was stated today by Loring Hosley, vice-president in charge of production for du Pont Motors, Inc. The first step will be to bring the engineering department here, and this is to be done immediately, he said. Paul du Pont, president of both du Pont Motors, Inc., and the Indian Motocycle Co., will remain in Wilmington, as will Francis du Pont, treasurer of du Pont Motors, Inc. Paul du Pont comes to this city frequently, and Mr. Hosley will be located here permanently.

This company has been producing five or six cars a week, it is said, and it is proposed to resume that rate as soon as the operations have been established in this city.

Windsor Reports Orders

ST. LOUIS, May 20—Orders for 225 Windsor cars have been received in the past three weeks by the Moon Motor Car Co., according to Helm Walker, vice-president in charge of sales. Production will be increased from 15 to 25 cars a day.

Davis Has Fire Loss

RICHMOND, IND., May 19—Loss estimated at about $18,000 was suffered by the Davis Aircraft Corp. May 12 when fire destroyed a race plane and the framework of a number of other planes.

Mooney Flays High Tariff Exponents as Encouraging Retaliatory Restriction of American Export Trade

NEW YORK, May 20—Asserting that the United States can no longer depend for its economic welfare on home markets alone, James D. Mooney, president of General Motors Export Co., flayed the proponents of high protective tariffs for encouraging reprisals in foreign retaliatory measures, in an address before the Western University Club here today.

"Few Americans," he said "realize the extent to which foreign retaliation has already set in. Reprisal is no tiger lurking in the dark jungle of tomorrow, waiting for us to commit an overt act before he leaps. He already is in camp, prowling about, emitting ominous growls. He has taken a few swipes at us with a wicked paw. He has drawn some blood.

"Canada, the best export customer of the United States, on May 2 put into effect provisionally a new tariff law designed to foster empire trade. This, our Department of Commerce estimates, will cut our $800,000,000 export volume to Canada by at least $225,000,000. Canadian Government heads did not beat around the bush in telling why they were putting a new tariff into effect. They frankly stated that it was a measure of retaliation against our proposed tariff wall and that if we wanted a tariff war we would get a tariff war.

"British industrial and government leaders have seized upon our new commercial aloofness for a revival of the 'Buy British Goods' and 'Empire Trade' movements with telling effect.

"Australia has put into effect an emergency tariff which raises duties on American cars approximately 50 per cent and also limits or embargoes entirely many other American commodities. Australia, hitherto, had been little affected by the 'Buy British Goods' campaign and has been most friendly in its attitude toward America.

"Italy is seriously discussing a 20 per cent increase in the already prohibitive tariffs operating against American automotive products.

"France on April 4 changed the basis of duty upon automotive exports from value to weight, resulting in an increase of as much as 50 per cent on some models and practically closing the market to American medium priced automobiles.

"Germany, due to the necessity of continuing to borrow from us, has not been quite so outspoken, so far as her government is concerned, but the people bitterly resent our attitude. Germany's automotive manufacturers have requested a tariff law which will set quotas upon our cars and provide for prohibitive tariffs upon all cars sold above the quota. This bill is pending. The German Metalware Makers Federation on May 10 requested the Trade Minister to associate himself with the protests of other European countries.

"Because of our projected tariff attack upon cork, Spanish cork men have petitioned their government for an abrogation of the trade treaty with the United States. The populace is becoming aroused. On March 7, Premier Berenguer of Spain, after a meeting of the cabinet, declared: 'If other means fail we shall take measures of retaliation.'

"In Argentina there long has been agitation for reprisals against our tariff. On May 5, the Minister of Finance appointed a committee of customs appraisers to draw up a new tariff. American automobiles, which constitute 96 per cent of the total automotive imports into Argentina, will be the first item to be studied, according to a press dispatch."

Mr. Mooney pointed out that the early proponents of high tariff in this country pointed out the possible effects on our industrial activities, if not controlled to suit the needs of changing economic conditions in the United States.

"Men like Blaine, Garfield and McKinley," he said, "figured in our history as representatives and 'high priests' of the protectionist policy, yet all of them knew that there is a point beyond which protection ceases to protect and begins to destroy.

"We are no longer a debtor nation. It is estimated that our investments abroad now amount to over fourteen billion dollars, exclusive of war debts, and of course we expect that these debts shall be paid.

"The facts are sufficient to show the gravity of the present situation. It would be an understatement to say that our foreign trade may be imperiled. We have not yet learned our great lesson, that we cannot go on indefinitely selling our goods to these peoples unless we are willing to buy their goods as well."

Michelin Plant to Reopen

MILLTOWN, N. J., May 20—J. Hauvette Michelin, vice-president and general manager of the Michelin Tire Company, dispels the rumor that the plant will not be reopened. He says the concern will open again when business conditions improve. The Michelin Co. shipped one of its calenders to its factory in Germany and another to the France plant. Some of the company's automobiles have also been sold. Some of the foremen have returned to their former homes in France.

Plating Called "Hazardous"

LONDON, May 8—As a result of investigations conducted by the Medical Inspectors of Factories, the British Home Office has classified chrome plating as one of the "dangerous" trades, to which special regulations apply.

Car Repair Financing Introduced in Dayton

Automotive Wholesaler Organizes Firm Finance Maintenance

DAYTON, OHIO, May 22—The sale of maintenance work on a time-payment basis, which has been applied in a few instances in the past by individual dealer and independent service stations, is being actively promoted at this time by parts wholesalers in several cities in the United States.

The plan was introduced several months ago by Harry Israel of the Dayton Auto Parts Co., Dayton. Israel created the Garage Owners' Finance Co. in connection with his business, which provides the funds for extending the time-payment privilege to the customers of the service stations which use the plan.

While the privilege is extended to all service stations whether customers of the Dayton Auto Parts Co. or not, the assumption, of course, is that service stations patronizing the finance company, whose office is located in the headquarters of the Dayton Auto Parts Co., will largely purchase the parts they require on the financed jobs from that company.

The financing plan contemplated by wholesalers in several other cities follows closely the details of the Dayton Auto Parts Co. plan.

The nationalization of the plan introduced by Mr. Israel anticipates, it is said, the organization of a national service station association with a small yearly membership fee which is to be devoted to promotion of sales of financed service through local newspaper and other advertising mediums.

The plan has been introduced and quite favorably received in more than a dozen Eastern and Middle Western cities within the past few weeks.

Curtiss to Concentrate

BUFFALO, May 22—Curtiss-Wright Co. is arranging to concentrate production of aircraft engines at plant of Wright Aeronautical Co., Paterson, N. J., and will move equipment from the Curtiss engine-manufacturing plant on Kail Street here. It is understood that latter works will then be closed or used for a different branch of output. Production of military airplanes will be centered at Kenmore Avenue plant, which will be developed to maximum capacity for parts manufacture and assembling.

Chrysler Adds 825 Dealers

DETROIT, May 21—The Chrysler Sales Corp. has announced that since the first of the year, 825 new dealers have been added to their sales organization, making a total of 3339 sales outlets.

Welders Elect Doyle

E. A. Doyle, consulting engineer of the Linde Air Products Co., was elected president of the American Welding Society at the annual meeting of the society.

French Imports Gain Over 1929 Quarter

Seen as Result of Stocking Up for Tariff Restriction

WASHINGTON, May 21—During the first quarter of 1930 France imported passenger cars and trucks valued at 124,748,000 francs, about $4,989,920, as compared with 56,376,000 francs, about $2,255,040 for the corresponding quarter of 1929, and 40,821,000 francs, about $1,632,840, for that of 1928, according to advices to the United States Department of Commerce from Automotive Trade Commissioner W. L. Finger, Paris. A part of the increase for the first trimester of 1930 may be attributed to the fact that a new tariff was pending and that many importers wished to provide stocks under the old rates.

In the above figures, passenger cars accounted for 118,407,000 francs in 1930; 55,035,000 in 1929, and 36,103,000 in 1928; the remainders represent trucks. The values include parts as well as complete cars, but figures on units include only complete automobiles.

The number of complete automobiles imported during the first quarter of the last three years are: 1930, passenger cars, 1877; trucks, 642; total, 2519. 1929: passenger cars, 1764; trucks, 44; total, 1808. 1928: passenger cars, 1808; trucks, 110; total, 1918.

Total French automobile exports, on the other hand, declined appreciably during the first quarter of the present year. This decrease is due to a heavy slump in passenger car shipments abroad, since truck exports show a gain.

During the first quarter of 1930, French exports of passenger cars totaled 8395 units, valued at 287,048,000 francs ($11,481,920), compared to 10,777 units valued at 369,100,000 francs ($14,764,000) in the similar period of 1929, and 8960 units valued at 309,296,000 francs ($12,371,840) in 1928. Truck exports totaled 2463 units with a value of 80,883,000 francs ($3,235,370), as against 1969 units, valued at 60,396,000 francs ($2,415,840) in the first quarter of 1929, and 1306 units, valued at 42,349,000 francs ($1,693,960) in the corresponding months of 1928.

American Chain Elects

NEW YORK, May 21—American Chain Co. has elected Charles G. Williams, sales manager, and Arthur P. Van Schaick, production manager, to its board of directors. Mr. Williams succeeds N. B. Marple, deceased, and Mr. Van Schaick is added to the board. Other directors were reelected.

AC Increasing Facilities

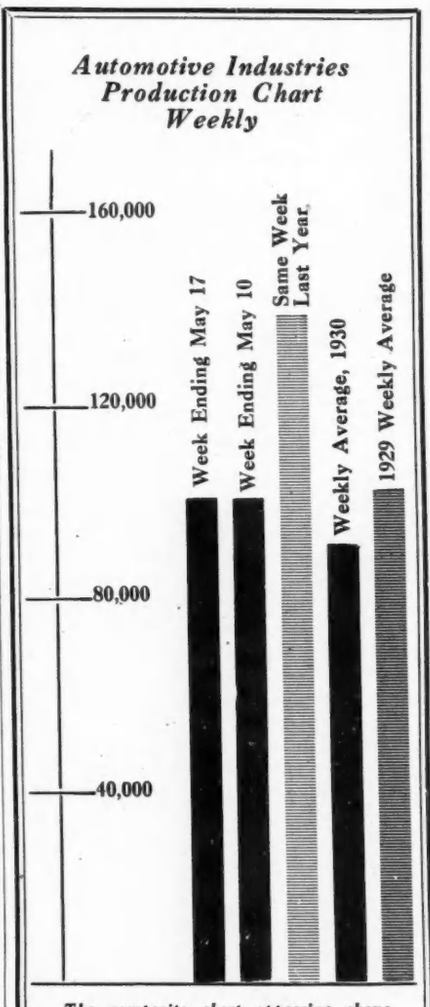
DETROIT, May 20—Increased manufacturing facilities are being installed to supply Mica insulated spark plugs for aircraft, according to Harlow H. Curtice, president of the AC Spark Plug Company.

Marmon Adds Custom Model

INDIANAPOLIS, May 22—A five-passenger four-door sedan with body by Weymann has been added to the Marmon Big Eight line, and is available for immediate shipment in limited quantities, it is announced by Thomas E. Jarrard, Marmon general sales director.

Peugeot Arrives in U. S. on Brief Business Trip

NEW YORK, May 21—Jean Pierre Peugeot, general manager of Automobiles S.A., France, arrived today on the S.S. Paris for a short business trip to this country. M. Peugeot is the son of Robert Peugeot, founder and president of the company. He left almost immediately for Boston, where he will spend a day or two, proceeding thence to the Middle West, where he will visit a number of American plants. He is accompanied by Mrs. Peugeot.



The composite chart appearing above will delineate each week production of passenger cars in the United States and Canada, for the week preceding publication of the issue in which it appears, together with production for the preceding week, and other factors. Data used in compiling it are obtained in confidence from a number of sources. Other factors may be added, dependent upon the cooperation of additional sources of information.

Paved Roads Vindicated in Operation Cost Study

Prof. T. R. Agg, Iowa State, Completes New Survey

AMES, IOWA, May 24—T. R. Agg, professor of civil engineering, Iowa State College, has completed a series of experiments showing relative costs of an average car driven at average speed over paved, dirt and gravel roads, showing the former is by far the cheapest highway.

For purposes of the "average" car, registration records of the state were used and experiments were conducted with medium, light and heavy four and six-cylinder machines and attempts were made to keep all cars at a uniform rate of speed.

"The most efficient speed varies for different cars but virtually all will work best when traveling between 30 and 40 miles an hour," Mr. Agg said. "If the speed is much higher, the wind resistance becomes an important factor." Using 1 as basis of comparative cost, total expense of operation over gravel roads was 1.18 and over dirt, 1.38.

Oil expenditure remained the same on the various types of road; gasoline cost was 1.2 on gravel and 1.47 on dirt with tires 2.22 on gravel and 2.9 on dirt, while depreciation varied from 1.1 to 1.24 on gravel and dirt. The total average included tires, gasoline, depreciation, oil, maintenance, garage, interest, license and insurance.

Approve Owens-Ford Merger

TOLEDO, May 21—Merger of the Libbey-Owens Glass Co. and Edward Ford Plate Glass Co. into the new Libbey-Owens-Ford Glass Co., to be headed by John D. Biggers as president, was formally approved by stockholders here Tuesday. The company is now putting its new continuous grinding and polishing plant into operation to improve quality of plate glass for making nonshatterable glass for automobiles.

Swanson Joines Peru

GALVA, ILL., May 22—R. H. Swanson, for the past four years in sales division of the Hayes Pump & Planter Co., Galva, Ill., sales and credit manager of the company the past few years, has resigned to accept sales managership wtih the Peru Plow & Wheel Co., Peru, Ill., June 1. Mr. Swanson has been identified with the Hayes company eight years.

Road Show For St. Louis

WASHINGTON, May 22—The 1931 Convention and Road Show of the American Road Builders' Association will be held in St. Louis, according to an announcement from the association. The decision was based on a desire to signalize the tremendous progress of the South in highway building during recent years.

April Equipment Index Shows Marked Up-Swing

Is Still Considerably Below Last Year's Level

NEW YORK, May 21—Automotive parts and equipment business during April showed a marked improvement, as compared with March, according to the monthly index figures just compiled by the Motor and Equipment Association. Business is still considerably below last year's levels, however, the April index for the whole industry being 163 for April of this year, as compared with 155 for March, and 254 for April, 1929.

Among the components of this index, service parts comes the nearest to last year's level with an index of 150, as compared with 139 for March, and with 174 for April of last year. Original equipment has shown a steady gain during the past few months, but still falls considerably behind last year, indicating a lower car production schedule than was in force last year. This index for April is 175, as compared with 167 in March, and with 287 last year.

Accessories set an index of 74, as compared with 67 for the preceding month, and with 91 a year ago. Service equipment index for April is 180, as compared with 175 in March, and with 227 for April, 1929.

For the second consecutive month wholesalers for the country at large have shown a reduction in accounts receivable in face of an increase in volume of business handled. This condition does not prevail in all locations, but is general for the country at large. The April index of accounts receivable is one point lower than that for March, while the business volume is six points higher. This is taken as indicating a healthful condition in the state of wholesale business.

National Plans New Line

IRVINGTON, N. J., May 22—Deliveries of Day-Elder trucks for the first four months of this year are running 30 per cent ahead of the same period last year, according to an announcement from the National Motors Mfg. Co. A new line of six-cylinder trucks at lower prices will shortly be announced by the company.

Callahan Joins Briggs

DETROIT, May 22—J. A. Callahan, formerly vice-president and general manager of the Martin Parry Corp., and more recently manager of the Buffalo plant of the Curtiss-Wright Corp., has joined the Briggs Mfg. Co., Detroit. It is understood that he will be in charge of a development project now being undertaken by the company.

Kelso Has Fire Loss

TRENTON, N. J., May 19—Kelso Mfg. Co., manufacturers of brake lining and clutch facing material, suffered a serious loss by fire on May 10. The flames were confined to both of these departments and were said to be due to the explosion of a barrel of material.

Murray Reports Best Month

DETROIT, May 20—The Murray Corp. of America has reported that April was its biggest month this year, with an output of 17,000 bodies. Current production is said to be continuing at about the same rate. With most of its customers so far this year operating on reduced schedules, Murray has been able to maintain operations in fair volume on Ford releases.

Chrysler May Operate Cabs

NEW YORK, May 20—Entry of the Chrysler Sales Corp. into the taxicab operating field in New York City is forecast by a display of Dodge taxicabs being held here this week. General Motors is already in the field with the Terminal Cab Corp., and an organization of Ford dealers has unsuccessfully sought to license a Ford type of cab. Change in police commissioners in New York, which occurred today, is expected to have some effect on the local operating situation.

Rolls-Royce Output Up

NEW YORK, May 20—Production at the Springfield, Mass., plant of Rolls-Royce of America, Inc., which has been proceeding at about 50 per cent of capacity, is being gradually stepped-up, according to an announcement from W. E. Hosac, vice-president. The company has opened a new sales headquarters in New York City. Receipt of an order for metal pontoons, and retractible landing gear from the Chance-Vought Co., aircraft manufacturer, has also been reported by Rolls-Royce.

Hudson Elects Sterling

DETROIT, May 20—C. D. Sterling, assistant secretary of the Hudson Motor Car Co., was elected a director at the annual meeting held here today, to succeed Courtney Johnson, who has resigned from the board. Mr. Johnson has been with the Hudson organization since 1916. All the other officers and directors of the company were reelected.

Automotive Construction Reports at Low Levels

Machine Tool Sales Spotty and New Building Projects are Off

PHILADELPHIA, May 22—Construction reported by automotive companies during the past week failed to recover from the low level of the past fortnight, reports to *Automotive Industries* indicated.

Machine tool sales were off, buying having been spotty. Among the announcements made were:

Bakelite Corp., New York, awarded contract for grading tract of 20 acres recently acquired at Bound Brook, N. J., and will soon make award for new plant to occupy large part of site, to cost over $300,000 with equipment. Francisco & Jacobus are architects and engineers.

Alloys Foundry Corp., Paterson, N. J., recently organized by Harry G. Lamker, formerly of Wright Aeronautical Corp., and associates, has work under way on new plant at West Paterson, for manufacture of aluminum and alloy castings to cost over $75,000 with equipment.

Frederick Thomas, Baltimore architect, has asked bids for automobile service, repair and garage building, to cost $180,000 with equipment. H. F. Doleman is engineer.

Hall Co., Milwaukee, awarded contract to Klug & Smith Co. to design and erect manufacturing addition. Investment will be about $250,000.

City Council, Pittsburgh, is disposing of a bond issue of $501,000 fund to be used for a joint city-county airport and aviation field, including hangars, repair shops and other units. Work is in charge of city engineering department.

Delco Products Corp., Dayton, Ohio, (subsidiary of General Motors Corp.), purchased automotive division of Wahl Co., Chicago, covering shock absorbers and kindred specialties, and will manufacture in future at main works at Dayton. Wahl Co. will continue, as heretofore, to manufacture metal pencils, pens, etc.

Diamond T Motor Car Co., Chicago, awarded contract to L. Breitag & Son Construction Co., Kansas City, for factory branch, service, repairs and sales building, Kansas City, to cost about $100,000 with equipment.

Airport Committee, Forest City, Ark., is completing plans for municipal airport, including hangars, repair shop and other field units to cost over $65,000 with equipment.

Hudson Introduces Phaeton

DETROIT, May 20—Introduction of a Phaeton in the "Great Eight" line has been announced by the Hudson Motor Car Co.

Rubber Invoiced to U. S.

WASHINGTON, May 22—American consular offices at Singapore, Penang, Colombo, Batavia, Surabaya, Medan, London and Liverpool, whose vise invoices on all rubber shipped to the United States from Malaya, Ceylon, Netherland East Indies, and the United Kingdom, report by cable the following amounts of rubber invoiced during the week ended May 17 as compared to amounts invoiced in 10 preceding weeks.

1930 Week Ended	British Malaya	Ceylon	Netherland East Indies	London and Liverpool	TOTAL
March 8	6,637	925	1,990	45	9,597
March 15	6,256	658	1,786	10	8,710
March 22	7,075	753	1,997	19	9,844
March 29	5,867	1,335	1,462	Nil	8,664
April 5	7,435	779	2,109	Nil	10,323
April 12	7,026	1,235	1,527	7	9,795
April 19	6,013	493	1,109	21	7,636
April 26	5,558	642	1,224	Nil	7,424
May 3	7,703	1,384	1,806	25	10,918
May 10	6,863	891	1,271	11	9,036
May 17	8,863	650	1,874	30	10,913

All figures in long tons.

Automotive Steel Demand Continues Moderate Rate

Close Buying and Short Stocks Feature Market

NEW YORK, May 22—Automotive demand for steel continues along unchanged lines. Considering business conditions in general and the state of the steel industry as a whole, finishing mills catering to automotive consumers are doing fairly well. Rollers specializing in full-finished automobile sheets are operating about two-thirds of their capacity. Automotive alloy steel makers have a fair run of routine business. Buying continues to conform closely to consumers' operating schedules, and quite frequently purchasing agents play so close to the cushion that mills are called upon to make special efforts in rushing shipments.

Under such conditions, recent intimations by economists that stocks of steel in consumers' hands are heavier than generally supposed hardly apply to the holdings of motor car manufacturers and parts makers. The market continues easy, which is only natural in the circumstances, but there is a tendency to exaggerate the soft spots.

An increase by 3 per cent in the discounts on bolts and nuts was the natural sequel of reductions in the price of the semi-finished material and denotes no fresh development in the market for bolts and nuts which fare no better and no worse than other steel products. Competition among mills for what cold-rolled strip business is to be had continues keen, and buyers have no trouble in obtaining a 2.45 cents, Pittsburgh, price on anywhere near worthwhile orders.

Concessions, in fact, are rather general on all-'round tonnage business, but the nominal levels on which the cuts are based hold quite steady, and the shading never exceeds $1 or $2 a ton.

Pig Iron—More iron is being shipped from furnaces, the increase resulting largely from water routes being available, making barge iron shipments possible to melters who prefer water deliveries. Prices show little change. Third-quarter contracting is in abeyance.

Aluminum—The recent sharp decline in the copper market has virtually been without effect on the aluminum situation, showing that competition between the two metals, at one time very keen, has lessened in this country. European advices state that the Continental Cartel has decided to cut the price about 1.10 cent per lb. The market is unchanged. Demand is quiet with slow improvement looked for.

Copper—A good deal of the heavy buying of copper since the decline is believed to have been by consumers who have virtually covered their entire 1930 requirements at what is generally looked upon the bottom of the market, but one hears hints that some of the metal has passed into hands that at the right moment may turn resellers. The market is steady at 13 cents, delivered Connecticut, and 13⅛ cents, delivered Middle West.

Tin—Unsettled conditions continue to prevail in the tin market, chiefly due to heavy visible supplies. The Straits market opened this week at 31¾ cents, with consumers showing little interest.

Lead—The market has turned quiet, some consumers holding off in the expectation of a possible cut in the domestic price.

Zinc—Easy amid light demand.

Foreign Briefs

A 122 cu. in. car assembled from American pasts is to be built in the Hansa Lloyd works in Bremen, Germany. The car is to sell at $1,325. Formerly Hansa Lloyd built a high-class eight-cylinder car, which, however, did not prove a commercial success, and last year the firm passed into new hands.

The German N. A. G. firm has made arrangements with the German general sales agency for the products of the Austrian Daimler-Steyr works whereby a common sales organization for N. A. G., Daimler and Steyr cars will be created in Germany.

According to an article in Automobiltechnische Zeitschrift, four German manufacturers are at present developing front-wheel drive models and expect to have them at the next Berlin show. The Allgemeine Automobile Zeitung reports that the Nationale Automobil Gesellschaft is developing a front-drive car under Voran patents with independently sprung driving wheels.

The British Society of Motor Manufacturers and Traders in its provisional standard No. 65 recommends that front wheels be adjusted without toe-in and without camber and that if the steering design be such as to require toe-in and camber, the former should be made not more than ⅛ in. measured at the center height of the tires, and the latter not more than 2 deg.

United Appoints Potter

DETROIT, May 21—F. A. Oberheu, president and general manager of the United Motors Service, has announced the appointment of W. N. Potter, for the past three years assistant to the director of sales, as director of sales. He was formerly in charge of sales of Jaxon rims, rim parts and wheels and AC products. Mr. Oberheu also announced the appointment of W. G. Hinnau, who has been doing special personnel and sales development work in the field as sales manager.

Reynolds Spring Elects

DETROIT, May 19—At the annual meeting of the Reynolds Spring Co. of Jackson, Mich., at New York, last week, Wiley R. Reynolds was reelected chairman of the board, and E. W. McIntosh, vice-president and sales manager, was added to the board. The following officers were reelected: Charles C. Munn, president; Mr. McIntosh, vice-president; R. A. Austin, vice-president, and E. W. Miller, secretary and treasurer.

Studebaker Names Monahan

C. H. Monahan, former assistant branch manager at Chicago, has been appointed manager of the Studebaker Washington, D. C., branch, according to J. M. Cleary, Studebaker sales manager. Monahan succeeds A. B. Connelly, who has resigned.

Cummings Forms Aero Unit

COLUMBUS, IND., May 22—Cummings Aviation Diesel Engine Corp. has been incorporated and will erect a plant here to manufacture Diesel engines for airplanes and automobiles. Clessie L. Cummings, William G. Irvin and Frank N. Richman constitute board of directors.

April Production Set at 442,630 Vehicles

Marks Highest Level Since Last August

WASHINGTON, May 22—Making a gain of 41,248, April production of motor vehicles in the United States totaled 442,630 units as against 401,382 in March, according to the Department of Commerce. The April total was the highest since last August when 498,628 motor vehicles were produced and almost quadrupled the figure of 120,007 last December.

Of the April total, 374,606 units were passenger cars, as against 335,789 in March; 67,459 were trucks as compared with 64,204 and 565 were taxicabs as against 1389. For the first four months of 1930 motor vehicle production in the United States totaled 1,466,590 units, of which 1,243,269 were passenger cars and 219,773 were trucks.

Canadian production of motor vehicles in April was 24,257 units, the highest since last May with an output of 31,559, and comparing with 20,730 in March. The April total consisted of 20,872 passenger cars and 3385 trucks as against 17,165 and 3565, respectively, in March. For the first four months of the current year Canadian motor vehicle production was 70,923, made up of 59,914 passenger cars and 11,009 trucks.

N.S.P.A. Show Plans Ready June 1

DETROIT, May 19—In answer to requests as to when floor plans and booth layouts for the sixth annual N.S.P.A. show will be available, R. Macfee, secretary of the National Standard Parts Association, has announced that a complete prospectus, including all information necessary for exhibitors, will be released on June 1. The show this year is being held in the Cleveland public auditorium, Nov. 17-21 inclusive.

Goodyear Plans Capital Increase

AKRON, OHIO, May 22—Goodyear Tire & Rubber Co. has arranged for increase in capital from 1,450,000 to 5,000,000 shares of stock, no par value, part of proceeds to be used for expansion, arranging for commercial production of a specially designed tire for aircraft, including air-wheel unit complete, contract for hubs, brakes, etc. let to National Acme Co., Cleveland, to be produced under Goodyear patents.

Murray Names McMahon

TRENTON, N. J., May 19—The Murray Rubber Co. announces the appointment of Arthur W. McMahon as general sales manager. Mr. McMahon was connected with the Raybestos-Manhattan Co., New York, for a long time, and is well-known in the rubber industry. He is said to be especially experienced in handling chain store work. The Murray company is operating about 75 per cent capacity.

Car Factories Bolster Michigan Employment

April Automobile Payrolls List More Workers

DETROIT, May 19—In the automobile industry in the state of Michigan, as of April 15, there were 252,346 employees, an increase of 2.5 per cent over the 246,178 employees in March and an increase of 14.8 per cent over the 219,705 employees in December, according to a report by the State Department of Labor and Industry based on reports of 61 companies.

The aggregate weekly pay-roll for the automobile industry in the state was $8,900,417 in April, an increase of 4.5 per cent over $8,509,718 in March and an increase of 50.5 per cent over $5,913,483 in December. Average weekly earnings per capita in the automobile industry were $35.41 in April, $34.56 in March and $27.07 in December, reflecting largely, an increase in operating hours rather than increased wage scales.

A comparison of the increase in activity in the automobile industry in this state with the increase in general industry is revealed in reports by 477 companies (including 61 automobile companies) which in the aggregate, show an employment increase of 4.6 per cent from March to April and an increase of 15.6 per cent from December to April. The aggregate pay-roll for these 477 companies shows an increase of 38.9 per cent from December to April and an increase of 4.1 per cent from March to April, while the average weekly pay-roll increased 20.1 per cent from December to April and decreased .5 per cent from March to April.

Yellow Truck Elects Fifteen

At the annual meeting of the stockholders of Yellow Truck and Coach Manufacturing Company the following were elected directors: Oscar L. Arnold, Irving B. Babcock, Marshall T. Boden, Albert Bradley, Ernest R. Breech, Fred J. Fisher, Paul H. Geyser, George A. Green, Harry C. Grossman, Frank V. Hadas, Thomas S. Merrill, John L. Pratt, John A. Ritchie, Paul W. Seiler, Alfred H. Swayne.

Correction

In the advertisement of the Delta Electric Co., of Marion, Ind., on page 78 of the May 10 issue of *Automotive Industries*, the switch illustrated and described was designated as a toggle switch instead of as a slide switch, which both the diagram and the text matter clearly indicate that it is.

Bosch to Exhibit Diesel Truck

NEW YORK, May 19—Robert Bosch Magneto Co. will have a Diesel-powered truck on exhibit at the summer meeting of the Society of Automotive Engineers at French Lick Springs, May 25 to 29. This truck will be driven from New York carrying as its load a 1901 Renault racing car, driven personally by Mr. Renault, and a Maybach Diesel engine. Following the summer meeting, the truck will be driven to State College, Pa., where it will be exhibited at the National Oil and Petroleum Conference to be held June 12.

Ford Assessment Reduced

DETROIT, May 19—As a result of conferences between the Dearborn Board of Review, Mayor Clyde M. Ford and B. J. Craid, a secretary of the Ford Motor Co., the company's requested reduction in assessed value has been revised from $34,000,000 to $22,000,000. The company formerly was taxed on the basis of an assessed valuation of $152,000,000. This year the company asked that the assessed value be reduced to $118,000,000, following a ruling by State Attorney General Bruckner that intangible assets were not taxable. The conferences have resulted in the adding of $12,000,000 to the requested valuation, making the compromise figure $130,000,000.

Muskegon Books Order

CHICAGO, May 19—The Muskegon Motor Specialties Co. has announced the receipt of an order from a large manufacturer of passenger cars for the immediate release of 300 cam shafts daily, with an increase to 500 shafts a day beginning June 1. The recent completion of the new plant at Muskegon, Mich., will enable the company to inaugurate production of this order at once.

National on Seven-Day Schedule

CHICAGO, May 15—National Standard Co., manufacturers of wire braid, woven wire tapes and steel cables used in the manufacture of casings, announces that all its plants are now running 24 hours daily, seven days a week. The company's machine shops are engaged in the construction of 52 new machines for the manufacture of wire braid.

Jefferson Earnings Gain

CHICAGO, May 19—Increased operating efficiency on the part of the Jefferson Electric Co. has been reflected in earnings during the year to date in excess of the figures for the corresponding periods in 1929 and 1928, despite smaller volume as compared with 1929 and an approximate parity with the 1928 business.

Stinson Increases Output

WILLIAMSPORT, PA., May 19—Lycoming Mfg. Co. has increased production schedules of its airplane division approximately 90 per cent during the month of May, W. H. Beal, vice-president announced today.

Auto-Vita Adds Space

CHICAGO, May 19—The Auto-Vita Manufacturing Co., manufacturers of automobile chemical specialties, has leased new quarters in the building at 5315 Lake Park Ave.

France Announces Subsidy to Airplane Manufacturers

French-Built Ships Allowed $315 as Minimum

WASHINGTON, May 20—Conditions of subsidies to private planes in France were announced recently by the French Air Ministry, according to a report received in the Department of Commerce from H. C. Schuette, assistant automotive trade commissioner, Paris, France.

Subsidies will be given to French citizens or flying clubs who buy planes built in France of a type in existence for less than six years. The recipient of the subsidy binds himself not to use the plane for profit except to engage in competition for sport purposes; he may lend his plane, but exclusively to French people.

Subsidies can be given for aircraft completed by the factory after Jan. 1, 1930, while those for upkeep will be granted for planes released from the factory after June 30, 1930.

A fixed premium of 8000 francs (about $315) is allowed for an airplane regardles of type. In the case of seaplanes, 10,000 francs are allowed if a single-place plane, 22,000 francs for a double-place and 34,000 for a three-place seaplane.

A premium on engines of 110 francs per horsepower between 40 and 60 and 200 francs per horsepower between 60 and 100 is granted under the condition that the engine is of French manufacture. The horsepower unit of engines less than 40 or more than 100 horsepower are not subsidized. Additional subsidies available are: 65 to 160 francs per hour of flight, with a maximum of 250 hours, a maximum of 6000 francs for all metal planes, and 7000 for special security apparatus including parachutes.

Stainless Steel Unit Operating

MASSILLON, OHIO, May 20—Operations have been started in the new stainless steel finishing division of the Republic Steel Corp., it has been announced by T. M. Girdler, chairman of the company. The new equipment, located at Massillon, gives Republic capacity for the production of highly polished stainless sheets. The metal is produced under Krupp license.

N. A. T. Completes Four Years

CHICAGO, May 19—National Air Transport, carrier of air mail and express between New York, Chicago, Kansas City, Fort Worth and Dallas, has completed four years of operation during which N. A. T. planes have flown a total of 7,330,179 miles.

Persia Increases Car Fees

WASHINGTON, May 19—Increased registration taxes on all automobiles in Persia, more than tripling the amount now paid on passenger cars and substantially adding to that paid on trucks and buses, have been provided for.

Men of the Industry and What They Are Doing

Long Leaves N.A.C.C., Joins Bethlehem Steel

NEW YORK, May 17—John C. Long, manager of the educational department of the National Automobile Chamber of Commerce for the past 10 years, has resigned to take charge of the publicity work of the Bethlehem Steel Corp., Bethlehem, Pa.

John C. Long

Mr. Long has also been secretary of the advertising and street traffic committees of the N.A.C.C. As secretary of the street traffic committee, he has been active in the National Conference on Street and Highway Safety, the so-called Hoover Conference.

His work as manager of the educational department involved the handling of all publicity relating to the chamber and its activities, and in this capacity he was also responsible for the publication of the annual "Facts and Figures" and certain other publications put out by the chamber. He is also the author of "Public Relations" and "Bryan, the Great Commoner."

He is a graduate of Amherst College, and prior to his association with the N.A.C.C., he spent several years in newspaper work, ending that phase of his experience in the editorial department of the Class Journal Co.

A farewell luncheon was tendered him at the Transportation Club, yesterday by Alfred Reeves, general manager, and the staff of the N.A.C.C.

Export Men Arrive

L. M. Rumely, general manager of General Motors Export Company, who has been on a four months visit of the European assembly plants of General Motors Export Company, arrived in New York May 17 on S. S. Statendam.

George Carroll, Cadillac-LaSalle specialist for Europe of General Motors Export Company, arrived in New York May 13 for a short visit to the home office.

Albert Duquette, parts manager of General Motors South Africa, arrived in New York May 13 on S. S. Scythia for his first visit to the home office of General Motors Export Company in four years.

J. N. Cook, production manager of General Motors South Africa, arrived in New York May 13 on S. S. Scythia for a visit to the home office and vacation. He was accompained by his family.

Knud Harboe, office manager of General Motors Argentina, Buenos Aires, arrived in New York May 13 on S. S. Eastern Prince. He will be at the home office of General Motors Export Company for about two months taking a training course for transportation engineer.

Oregon Section Elects, Plans Summer Meeting

PORTLAND, ORE., May 19—H. W. Drake, was elected chairman of the Oregon section, Society of Automotive Engineers at the monthly meeting held here. C. C. Humber was elected vice-chairman; J. Blaser, second vice-chairman; Professor F. G. Baender, third vice-chairman; F. P. Myers, secretary, and J. V. Savage, treasurer.

The comparative economy of operating planes was pointed out by G. A. Rathert, vice-president in charge of engineering and production for the Breese Aircraft corporation, in a paper on "Air Transportation."

Plans were discussed for the summer meeting of the Oregon section, Society of Automotive Engineers, which will be held at Longview June 27 and 28th. One day will be devoted to aviation and one day to the logging industry, covering Diesel engines, tractors and trucks. Papers thus far arranged for include those of R. J. Minshall, senior engineer of Boeing Airplane company, Seattle, and W. Wagner of the Caterpillar Tractor company, San Leandro, Cal.

Graves Succeeds Sneathen

Walter S. Graves, who for the past 10 months has been assistant director of truck sales, Dodge Brothers, has been appointed director of truck sales, succeeding Howard E. Sneathen, resigned. Walter F. Clancy, formerly assistant director of truck sales in the Stockton, Calif., zone, and K. A. Ridenour, who for the past several months has had charge of vocational advertising for Dodge Brothers, have been appointed assistant directors of truck sales. Mr. Graves has been a member of the Dodge Sales organization for the past five years.

Reuter Visits Lansing

DETROIT, May 19—I. J. Reuter, president of the Olds Motor Works and managing director of Adam Opel, A.G., the General Motors unit of Russehsheim, Germany, arrived in Lansing last week for a short stay at his home near Eaton Rapids. Mr. Reuter was transferred to the German plant last December.

Wood Goes to Muncie, in Olds Executive Shift

DETROIT, May 19—John G. Wood, who for the past three years has been in charge of engineering at the Olds Motor Works, Lansing, Mich., has been appointed general manager of Muncie Products, a division of General Motors devoted to the manufacture of transmissions, steering gears and chassis parts, according to an announcement made today by D. I. Eddins, vice-president and general manager, Olds Motors Works. At the same time Mr. Eddins announced that C. L. McCuen, chief engineer of Olds, would assume the title of director of engineering.

C. L. McCuen

Three other members of the Olds Motors Works organization accompany Mr. Wood to Muncie Products. K. C. Plasterer, production engineer at the Oldsmobile-Viking factories, has been appointed assistant to the general manager at Muncie. He is succeeded as production engineer at Olds by Howard S. Currier, who has been a member of the Oldsmobile-Viking experimental staff. Fred W. Cederleaf, for several years superintendent of the tool design department of Olds, has been appointed assistant factory manager at Muncie. He is succeeded in his present position by Everett F. Leighton.

E. D. McLean, of the Oldsmobile-Viking engineering department, has been appointed in charge of engineering tests and record at Muncie.

Auto-Lite Names Bailey

DETROIT, May 17—W. J. Bailey, formerly director of traffic of Durant Motors, Inc., has been appointed director of traffic for the Electric Auto-Lite Co., and its 18 affiliated and associated companies, according to an announcement by C. O. Miniger, president of Electric Auto-Lite. Mr. Bailey joined Durant Motors in 1922 when the company was formed, having served Chevrolet, first as traffic manager at the Flint factory and later in New York as director of traffic. With the moving of major manufacturing activities of Durant from Elizabeth, N. J., to Lansing a year ago, he returned to Michigan to direct traffic to and from the Durant plants in Lansing, Oakland, Calif., and Toronto, Ont., and the unit making plants at Muncie, Ind.

Business in Brief

Written by the Guaranty Trust Co., New York, exclusively for AUTOMOTIVE INDUSTRIES.

NEW YORK, May 22—The volume of business last week was on a moderate scale, and in some lines trade was actually quiet. Retail trade was hindered by the rains and colder weather in many sections of the country, while wholesale and jobbing trade continued to lag.

RETAIL SALES

Department store sales during April, according to a preliminary report of the Federal Reserve Board, were 8 per cent above those a year ago, although sales during the first four months of the year were 4 per cent below those a year ago.

Sales of 47 store chains during April amounted to $288,726,944, which marks an increase of 10.78 per cent above those in the corresponding month last year. Sales of these same store chains during the first four months of this year were 6.24 per cent above those a year ago.

CONSTRUCTION

Construction contracts awarded during April in 37 Eastern States, according to the F. W. Dodge Corp., totaled $483,251,700, which was the largest for any month since August of last year. At this level, contracts awarded were 6 per cent above those in the preceding month but 25 per cent below those a year ago.

CAR LOADINGS

Railway freight loadings for the week ended May 3 totaled 942,899 cars, which marks a decrease of 109,036 cars below those a year ago and a decrease of 35,154 cars below those two years ago.

FISHER'S INDEX

Professor Fisher's index of wholesale commodity prices for the week ended May 17 stood at 88.7, as against 89.0 the week before and 89.7 two weeks before.

STOCK MARKET

The stock market last week was very irregular, with the volume of transactions on a reduced scale. The market was strong in the earlier part of the week, but unfavorable accounts of the steel industry, with a shading of prices, had a depressing influence.

FEDERAL RESERVE STATEMENT

The consolidated statement of the Federal Reserve banks for the week ended May 14 showed decreases of $27,000,000 in holdings of discounted bills and of $4,200,000 in holdings of bills bought in the open market. Member bank reserve deposits increased $29,900,000, while holdings of Government securities remained practically unchanged. The reserve ratio on May 14 was 83.6 per cent, as against 83.0 per cent a week earlier.

Italy is Good 'Cycle Market

WASHINGTON, May 19—The first eight months of 1929 proved to be an exceptionally good period for the sale of motorcycles in Italy, the registrations reaching a total of 78,772, as compared with 66,072 on January 1, 1929, an increase of 19 per cent over the whole year of 1928 according to a report from Consul Sydney B. Redecker, Naples, made public by the Department of Commerce.

Based on the increase during the first two-thirds of the year, the total registrations for the entire year will, it is estimated, approximate an increase of 30 per cent over the previous year.

Varzi Wins Sicilian Race

PARIS, May 8—All records were broken in the twenty-first annual Targa Florio on the island of Sicily, when Achille Varzi went over the finishing line on a 122 cu. in. supercharged Alfa Romeo racing car, having covered the distance of 338 miles in 6 hrs. 55 min. 16 4/5 sec., or at an average of 48.47 m. p. h. Bugatti, who has won this race for five successive years, came in second with Louis Chiron 1 min. 48 2/5 sec. behind the winner. Count Conelli on a 132 in. Bugatti was third, with Campari and Nuvolari, both on Alfa Romeo cars, fourth and fifth.

The race, which is run over the most difficult course in Europe, for it starts from sea level and rises to an altitude of 3000 feet, and has more than one thousand distinct turns per lap of 65 miles, united eighteen starters, of which twelve finished. The makes represented were Alfa Romeo, Bugatti, O. M., and Maserati.

Lamont is Optimistic

WASHINGTON, May 22—According to Secretary of Commerce R. P. Lamont, basic conditions at this time are much better than they were in 1921 and "if business improvement continues at its present rate we shall be back to the line of normalcy within a few months." Business now was said to be only six points below the line of normal growth which itself, it was stated, is at a higher point than it was nine years ago, being adjusted to the gradual improvement in living conditions, purchasing power, etc. Secretary Lamont said that recent foreign trade decreases reflected lowered purchasing power, referring to depressed prices for staple imports, such as rubber, coffee, sugar, wool and tin.

Winton Reports Profit

CHICAGO, May 19—Winton Engine Co., for the four months ending April 30, reports a net income of $220,732, equal to $2.32 a share on 95,000 common and preferred shares, against $241,939, or $2.54 a combined share in the same 1929 period.

"Certified Lubrication" Available

NEW YORK, May 22—Standard Oil Co. of New York has made public announcement today of a new Certified Lubrication Service, obtainable at its own stations throughout "Soconyland" and through a number of its dealers.

Recommends Simplified Practice for Abrasives

Bureau of Standards Sets Table After Conferences With Manufacturers

WASHINGTON, May 22—A simplified practice program for aluminum oxide and silicon carbide abrasives for polishing uses and for grinding wheel manufacture will become effective Sept. 1, provided the industry accepts a recommendation made at a conference under the auspices of the Division of Simplified Practice, Bureau of Standards, held here on May 8 between manufacturers and users of these products.

The program is based on a table of allowable limits for the sizing of these abrasives as proposed by the producers of electric furnace abrasives. The appointment of a standing committee of the industry, composed of three representatives each of the manufacturers and users, was authorized.

In addition to the appointment of a standing committee, those in attendance were of the opinion that a technical committee should be formed for the purpose of conducting research on screens used in grading abrasive grains.

Two abrasive manufacturers, two screen manufacturers and two consumers will be invited to serve on this committee.

Publishes Airport Bulletin

WASHINGTON, May 22—The aeronautics branch of the Department of Commerce has just published a revision of its standard Aeronautics Bulletin No. 5, entitled "Airports and Landing Fields," which lists nearly 1600 municipal, commercial, and private airports; army and navy airdomes and air stations; Department of Commerce intermediate landing fields, and marked auxiliary fields.

The airports and landing fields listed in the bulletin show that California stands first with 163; Texas second with 106 and Pennsylvania third with 87.

Allis-Chalmers at Peak

CHICAGO, May 19—Operations of Allis-Chalmers Mfg. Co. currently are ahead of those of a year ago, with tractor orders exceeding production. Unfilled orders attained a new high mark and totaled $16,770,000 on April 30, which is $1,200,000 over March 31 last. Compared with December 3 last, unfilled business showed a gain of $3,898,000, or more than 30 per cent.

Gleaner Profits Increase

CHICAGO, May 19—The earnings of the Gleaner Combine Harvester Corp. in April amounted to $264,473, after all charges except depreciation and taxes, as compared with $208,445 in the like 1929 period. The earnings for the first four months of 1930 were $907,535, as against $618,066 in the corresponding period last year.

Ohio Employment Gains Although March Slumps

April Shows 4 Per Cent Increase, University Survey Says

COLUMBUS, OHIO, May 19—The Bureau of Business Research of Ohio State University in a bulletin tabulating employment in the automobile and auto parts industries in Ohio shows that April employment was 4 per cent greater than that of March this year and 31 per cent less than in April, 1929. The March to April increase of 4 per cent is slightly greater than the average increases noted in former years since the Bureau started to collect statistics five years ago.

The normal increase in April employment over March is 3 per cent. Average employment during the first four months of the year was 34 per cent less than during the corresponding period last year.

Of the 52 reporting concerns, 26 showed increases in April employment over March, 25 showed decreases and one showed no change.

Stewart-Warner Report Cut

CHICAGO, May 17—Stewart-Warner Corporation's pamphlet report for the first quarter, just issued, makes no change in the earnings figures given out a short time ago. The consolidated balance sheet as of March 31 last shows total assets of $32,760,973, comparing with $33,717,212 on March 31, 1929, and profit and loss surplus of $17,452,704 against $18,342,489.

Current assets were $14,154,922 and current liabilities, including reserve for Federal taxes, totaled $2,319,079, comparing with $17,423,897 and $3,374,723 respectively on March 31, 1929.

Installing Giant Conveyor

DETROIT, May 19—What is said to be one of the longest overhead chain conveyors in the world is nearing completion at the Rouge plant of the Ford Motor Company. Three and a half to four miles in length, as it will be when completed, it interconnects a number of the important sub-plants at the Rouge layout, including the steel mill, the spring and upset building, the general assembly building, the Motors building, and shipping docks.

Feature Issues of Chilton Class Journal Publications

Chilton Automotive Multi-Guide, First Semi-annual Issue.

Ready in May

Peerless to Sell Equipment

CLEVELAND, May 19—J. A. Bohannon, president of the Peerless Motor Car Corp., announced today that machinery and equipment which was made surplus by the re-tooling and concentration of production in its new No. 1 plants, would be sold at public auction.

The definite date of auction has not yet been fixed but it is understood that the sale will take place about the middle of June. The Industrial Plants Corporation has been engaged to sell this equipment.

Arrow Reduces Planes

LINCOLN, NEB., May 19—A second reduction in prices this season on the Arrow Sport line is announced by the Arrow Aircraft & Motors Corp. The Arrow Sport Pursuit (Kinner) is reduced from $3,995 to $3,500; Arrow Sport Ninety (Lambert R-266) from $3,500 to $3,250; and Arrow Sport Trainer (LeBlond 60) from $3,131 to $2,700.

C. I. T. to Finance Cooper Sales

NEW YORK, May 19—An exclusive contract has been signed by Commercial Investment Trust, Inc., New York, with the Cooper-Bessemer Corp., Mt. Vernon, Ohio, manufacturers of internal combustion engines, for financing Diesel and Gas Engine sales made on the time payment plan.

Forms Tire Cover Company

COLUMBUS, OHIO, May 19—The formation of the Columbus Metal Tire Cover Co., Inc., with a capital of 350 shares of no par stock, was announced recently by Frank Grothkopf, who has been associated with various tire cover manufacturers for the past 18 years.

I. C. C. Broadens Survey of Motor Transport Field

Extent of Coordination of All Vehicles to be Studied

WASHINGTON, May 22—Broadening the scope of its investigation regarding coordination of motor transportation, the Interstate Commerce Commission last week entered an order which provides for the gathering of information which will cover exhaustively not only the operation of motor vehicles on highways but the relationship between this mode of transportation with rail and water transportation.

Hearings will be held at such times and places as the commission may direct. The commission is to report its findings to Congress and provided they are concluded before the next session of Congress it is thought they may have a bearing on pending motor bus legislation which has passed the House but will not be acted upon at the present session by the Senate.

The order provides for an investigation regarding the coordination of motor transportation whether independent or connected with other service, rail or water, and makes all rail and water carriers, subject to the interstate commerce act, respondents in the proceedings.

The inquiry will go into the matter of competition of motor transportation.

Tax Standard Sought

WASHINGTON, May 19—Determination of a uniform system for rating and taxing motor vehicles has been the subject of an investigation of the Bureau of Standards in cooperation with the State of Connecticut, according to George K. Burgess, Director of the Bureau.

The investigation sought to find a simple method of distributing a total tax levy, determined by the State, among the various classes of vehicles and the units within a class as nearly as possible according to the amount and character of each vehicle's use of the streets and highways.

Davis Regulator Changes Name

CHICAGO, May 19—G. M. Davis Regulator Co. has changed its name to Davis Regulator Co.

Calendar of Coming Events

SHOWS

Berlin, International Automobile..Nov. 6-16

CONVENTIONS

Society of Automotive Engineers, Summer Meeting, French Lick Springs May 25-29

Automotive Engine Rebuilders' Association, Convention, Chicago..May 26-28

National Conference on Street and Highway Safety, Washington.May 27-29

National Automobile Chamber of Commerce, Annual Meeting, New York June 5

A. S. M. E., Semi-Annual Meeting, Detroit .....June 9-12

A. S. M. E., Oil, Power & Gas Div. State College, Pa. .....June 12-14

World Power Conference, Berlin.June 16-25

Railway Supply Mfrs. Assn., Meeting and Exhibit, Atlantic City..June 18-25

American Railway Association, San Francisco .....June 23-26

American Society for Testing Materials, Annual Meeting, Atlantic City .....June 23-27

Steel Founders Soc. (Midsummer Convention) White Sulphur Springs June 26-28

Society of Automotive Engineers, Aeronautical, Chicago .....Aug. 26-28

Eastern States Exposition, Springfield, Mass. .....Sept. 14-20

National Safety Council, Annual Safety Congress, Pittsburgh....Sept. 29-Oct. 4

Sixth International Road Congress, Washington, D. C. .....Oct. 6-11

Exhibition—American Roadbuilders Association, Washington, D. C....Oct. 6-11

Society of Automotive Engineers, Production, Book-Cadillac Hotel, Detroit .....Oct. 8-9

Society of Automotive Engineers, Transportation, Pittsburgh .....Oct. 22-24

Motor and Equipment Association, Convention, Cleveland.....Nov. 10-14

SALONS

Chicago, Drake Hotel .....Nov. 8-15

New York, Commodore Hotel.Nov. 30-Dec. 6

RACES

Indianapolis .....May 30

Belgium .....July 5-6

Germany (Grand Prix) .....July 13

Belgium (European Grand Prix)....July 20

Spain .....July 27

Italy (Grand Prix) .....Sept. 7

France (Grand Prix) .....Sept. 21